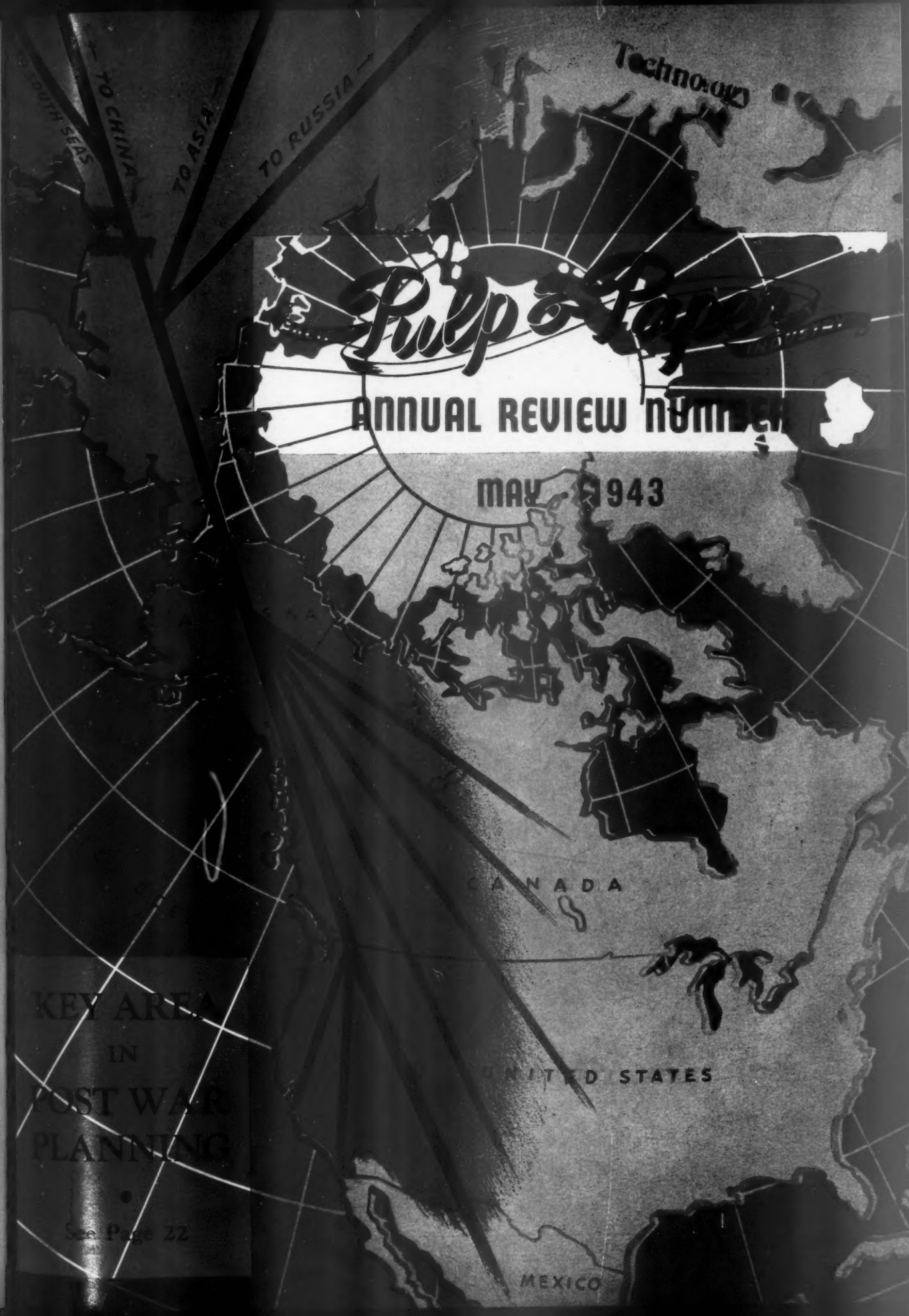


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KEY AREA  
IN  
POST WAR  
PLANNING

See Page 22

# From the SOLOMONS to REYKJAVIK...



## CHLORINE performs a vital service!

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Supplies for a distant fighting force—on a South Pacific Island, on a North African Coast. No docks to use. No time to lose. Into the surf they must go—thousands of cases of food, clothing, munitions. Hours and days must pass before they can be collected. And the contents must be protected.

That urgent problem was solved by the paper industry—with sturdy water-proof packing that withstands the ravages of the sea, the crushing impact of the breakers and the shore.

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**F. C. HUYCK & SONS**

*Kenwood Mills*

Albany

New York



*The Journal of the  
Pacific Coast Industry*

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## Wood Saving--No Longer a Noble Experiment

(An Editorial)

**G**REATER utilization of waste wood in mills and on logged off lands has become a prime wartime objective of the Pacific Coast pulp and paper industry.

Emphasis on this policy was bound to come. There are four good and sufficient reasons:

1. The manpower shortage in the woods is acute.
2. Raw materials costs are higher.
3. Natural forest resources are becoming more scarce.
4. Higher taxation is an impelling factor.

Historically, the Pacific Coast industry is based on waste utilization. There was a day long ago when hemlock was left on the land and considered worthless. Then pulpwood costs were negligible.

Important developments are now under way in British Columbia for utilization of waste wood left on the land after the spruce and other aircraft logging operations now under way to meet war demands.

The Weyerhaeuser pulp division is now making much greater use of waste from the mills of the timber division than ever before. But the outstanding development along this line anywhere in the industry is the new Weyerhaeuser barking and chipping plant which is described in this issue. At the Everett pulp mill, the Weyerhaeuser Timber Company has started operation of the biggest log barker and biggest chipper in existence in the world. The article describes how this new plant effects an 18 to 20 per cent greater utilization of pulp logs.

At National Paper Products Co., division of Crown Zellerbach Corporation, Port Townsend, Wash., another log hydraulic barker has been installed. It is still considered as in "an experimental stage" by the Crown Zellerbach executives but it is showing every promise of being successful as far as the demands of that mill are concerned.

At Port Townsend, a great amount of sawmill waste is being utilized by the pulp and paper mill.

An important aircraft cutting operation is the Cathlamet, Wash., sawmill of the Crown Zellerbach Corporation. From here spruce, as well as hemlock waste goes to the Camas paper mill for utilization.

The Columbia River Paper Mills at Vancouver, Wash., made an estimated \$30,000 worth of installation in order that waste from aircraft logs might be diverted to pulp, increasing the pulp supply. These installations were described in our February, 1943, issue (page 11).

Greater utilization of wood by saving aircraft cants out of pulp-designated logs is being practiced at Puget Sound Pulp & Timber Company, Bellingham, Wash.; Oregon Pulp and Paper Company, Salem, Ore.; Powell River Company at Powell River, B. C., and other mills.

Longview Fibre Company is an outstanding utilizer of waste wood, with about three-fourths of its pulpwood coming by conveyor from the nearby Long Bell sawmill. The Fir-Tex Insulating Board Company's chip consumption derived from sawmills is about in the same proportion. This has been an increasing trend in all of the industry.

The increasing consciousness of the Pacific pulp and paper industry toward the urgency of greater wood utilization indicates that the brains of this industry are not only thinking of war aims but of post-war conditions.

There are increasing signs that mills which are pointing toward low-cost operation and greater wood utilization are the ones who will be packing the ball after the war.

Greater wood utilization is no longer a theory or an ethereal, ethical or moral topic of discussion. It is just plain good business.

It seems inevitable that there will be more whole log hydraulic barking and chipping units after the war.

One comment made by an interested observer may be prophetic. He said he didn't see how the lumbering industry could overlook the wood-saving hydraulic barker after the war.



# Wood Pulp and Paper



SELLING AGENTS

**BULKLEY, DUNTON PULP CO.**

INCORPORATED

295 Madison Avenue, New York, N. Y.

# Mills Wanted More War Work; Result--The Machine Shop Program

By JOHN H. SMITH

President, Pacific Coast Association  
of Pulp and Paper Manufacturers

**J**UST a little over a year ago the Pacific Coast Association of Pulp and Paper Manufacturers decided that it wanted to give greater assistance to the war effort of the nation than by merely producing the essential pulp, paper and paperboard for Army, Navy and civilian war uses, notwithstanding the tremendous importance of many of these more orthodox products of the mills.

Since their earlier involvement in the war, the Canadian pulp and paper mill machine shops had been doing an extraordinary job of machining and finishing war materials for government contractors. The idea of the United States industry doing a similar job was first discussed in Washington, D. C., by the Pulp and Paper Advisory Committee of the War Production Board. None were more enthusiastic over the idea than the Pacific Coast members.

It was only natural, because of this enthusiasm, that the scheme would come up for discussion at the very first opportunity afforded the membership of the Pacific Coast Association. A meeting was called for April 23, 1942, in Portland, Ore., for the purpose of finding out what else we could do for our country besides manufacturing pulp, paper and paperboard.

Many of the member mills were equipped, of course, with prime machine tools which are so necessary to keep the intricate machinery of pulp, paper and paperboard manufacture in operation with the least possible loss of time for repairs. A plan was discussed at this meeting to give as much time as possible on these lathes, shapers, planers and other basic tools to manufacturing and finishing vital parts for aircraft carriers, destroyers, Liberty ships and other ships of war. It was unanimously agreed that this work should be undertaken and carried on even at the expense, whenever necessary, of keeping the mill machinery up at top efficiency.

A committee was appointed immediately to initiate the program. Members of the committee were J. E. Hanny, resident manager of the Crown Zellerbach mill at Camas,



**JOHN H. SMITH** (President of Hawley Pulp & Paper Co.) of Oregon City, Ore., President of the Pacific Coast Association of Pulp and Paper Manufacturers.

Wash.; N. M. Brisbois, vice-president in charge of operations of Fibreboard Products Inc., San Francisco, Calif.; L. S. Burdon, general manager of Soundview Pulp Company, Everett, Wash.; Irving T. Rau, secretary-treasurer of St. Helens Pulp & Paper Company, St. Helens, Ore., and E. H. Vicary, resident engineer, central engineering office, Rayonier Incorporated, Port Angeles, Wash.

The committee agreed that James F. Brinkley of Seattle would be an ideal coordinator for the association because of his knowledge of machine shop practice, his extensive experience in machine shops and his wide acquaintance and high esteem among both the prime contractors for this work and the executives and supervisors in the pulp and paper mills.

A telephone call was made to Mr. Brinkley toward the end of that same eventful day which had commenced with the general meeting and that night he was on a plane heading for Portland from Seattle. The next morning, April 24, he was offered a full time appointment as coordinator of the mill machine shop work. He accepted in the same

patriotic spirit that the offer was made.

The same day a telegram was sent to David C. Winton, then the chief of the pulp and paper branch of the War Production Board in Washington, D. C., outlining the program and stating that "the coordinator will be requested to compile a factual report on machines available, machines committed to war work and actual volume of war work contracted for by the machine shops."

These duties have been fulfilled by Mr. Brinkley on a month-to-month basis ever since that date. He also has given the mills invaluable advice on how they might best utilize their machines and he has frequently served as liaison between the mills and the prime contractors.

Twenty-six mills out of the entire 34 mill membership of the Pacific Coast Association, excluding only a few with inadequate tools, went to work on the program. Many of them immediately initiated a second and a third shift in the machine shop. The goal was set at 100 hours a week. Roughly, the program called for two full eight-hour, five-day shifts plus half of a third per week,



**JAMES F. BRINKLEY OF SEATTLE** has completed one year of service as the Coordinator of the Machine Shop War Work for the Pacific Coast Association of Pulp and Paper Manufacturers.

with the mills getting their own maintenance work done during that half shift.

While some of the shops have been able to operate at 100 per cent, there are others in certain location, in some cases too distant from prime contractors, that have not yet been able to bring their work up to the total projected capacity. But, the Pacific Coast Association, as a whole, has shown continuous improvement.

The officers of the Pacific Coast Association, the members of its original machine shop committee and others active in the association have met from time to time to make suggestions and discuss ways of bettering our efforts and of keeping members interested in the program. But the main task of putting the program into practice was the responsibility of Mr. Brinkley.

It was no easy matter for the pulp and paper mills participating in this

## A Salute By The Maritime Commission

UNITED STATES MARITIME COMMISSION  
WASHINGTON

OFFICE OF THE CHAIRMAN

May 8, 1943

Editor  
Pacific Pulp & Paper Industry  
71 Columbia Street  
Seattle, Washington

Dear Sir:

It is with full knowledge of the important part being taken in the country's war program by the pulp and paper industry of the Pacific Coast, that we of the Maritime Commission salute it.

We salute, too, the sense of duty with which the machinists and mill men approached the problem of rapidly converting their shops to war work. The determination they are displaying in creating and maintaining a flow of much-needed products to our war industries is an inspiration to the whole country.

Without the zeal and industry displayed by these workers and thousands more like them, the record-breaking number of ships now being launched from our yards and our tremendous production of war goods would not be possible. The willingness of these workers to put in long hours and intense effort unites them in common cause with our armed services, in repelling and vanquishing the Axis forces which would destroy our liberties and our way of life.

Sincerely yours,

*E. S. Land*

E. S. Land  
Chairman



ADMIRAL EMORY S. LAND, Chairman of the Maritime Commission and Administrator of the War Shipping Administration. In letter, at left, he lauds zeal of pulp and paper mill machine shop employees in carrying out war work program.

program to take their maintenance shops and transform them into regular production plants. Going on a jobbing basis without previous experience, many of our men quoted ridiculously low prices for the work. They didn't have enough skilled employees, either, and in many cases had to take men from various parts of the mill and train them in the fundamentals of mechanics. In a remarkably short time, some A-1 machinists were turned out.

The spirit of our shop employees was wonderful. It wasn't as easy as falling off a log, by a long shot. There were many difficult engineering problems. Unusual resourcefulness and initiative were shown by mill employees in devising special jigs to do difficult jobs and in making use of scrap materials.

Some of the member mills have gone to great expense on their own



to equip themselves so that they could handle more difficult and bigger jobs for the shipyards, foundries and other prime contractors.

They have done 30-ton cranes, big rudder assemblies, stern posts, manifolds for aircraft carriers, catapult rails, propeller shafts, winch drums, invasion barge ramp gate and bow door operating mechanisms, army tugboat shafts and couplings, and all kinds of valves as well as many small, intricate mechanisms such as steering gear parts.

A year ago there were not many in our industry who would have dared to dream that our machine shops, fine as they are, would have been

able to do some of the difficult jobs they have accomplished.

But the pulp and paper industry of the Pacific Coast does not want to take all the credit for this.

We would not have been able to achieve such a record without the advice and assistance of the prime contractors. Many of them went out of their way to give the mills the benefit of their experience and to tangibly assist the mills in putting themselves on a production basis from a merely maintenance basis. Several of them assigned full-time representatives from their staffs to help the mills.

To these contractors we say thanks

for everything and don't ever forget as this work continues that we want to make a maximum contribution of our facilities that are available. We are depending one hundred per cent on the contractors to make this possible.

We are glad that we could help to relieve a congestion that was apparent a year ago in the commercial machine shops of the Pacific Coast. We want to continue to supply these vital parts for the warships and cargo ships of our country to the limit of our ability right up to the hour of unconditional surrender of the enemy.

## With Help of Pulp and Paper Industry These Liberty Ships Go To War



**BECAUSE MANY OF THEIR VITAL OPERATING PARTS** were carefully tooled and finished in machine shops of the Pacific Coast pulp and paper mills, Liberty Ships have succeeded in carrying precious cargoes to our armed forces and our allies through enemy fire from the air, on the sea and below the sea.

This picture shows the Liberty Ship Sam Crawford on a tugboat run in the Willamette River. The picture is taken from a sister ship on whose deck can be seen a winch drum and valves (lower foreground) and an anchor windlass, which may be discerned on the raised after deck—products of pulp and paper mills.

An inspection of these ships would reveal many other parts from those mills—big rudder assemblies, 1,000-ton tiller arms, stern frames, propeller shafts, engine parts, including gear, valves, oil ring bearings, stuffing boxes and shafts, and steering gear parts. Above and below decks, fore and aft, are to be found these contributions, without which these ships could not operate.

## Engineering Ability Demonstrated in War Work

● In this world of ours, the last man to weld a plate on a ship seems to get the credit for building it. All the speeches and flagwaving take place at the ways.

The men—and women—in the pulp and paper mill machine shops who have been producing vital parts for warships, tankers and cargo ships are agreed that this is as it should be. In fact, let's have more flag-waving, they say, if it means more ships will be launched.

On these pages of PACIFIC PULP AND PAPER INDUSTRY, an attempt is made to give those men and women of the pulp mills the credit they deserve, too. They can't get away from their tools to be present at the launchings but they have performed a service just as important as the thousands of shipyard workers. In some cases, perhaps, more important, because the machine work required special skills.

When the Pacific Coast Association of Pulp and Paper Manufacturers inaugurated this war work program, a serious bottleneck threatened the production of ships in the machine shops. The pulp and paper mill machinists are happy that they could have helped to break this bottleneck.

From May 1, 1942, to May 1, 1943, the total number of man hours put into this war work in the machine shops of mills in Washington, Oregon and California was 781,237. The estimated value of this work, including labor and materials, was \$4,000,000.

During the last month reported, April, 1943, the shop work had steadily climbed to 94,237 hours, almost fifty per cent above the average monthly total for the year.

Here is the list of mills, which, because they had equipment and engineering ability, were able to participate in the machine shop war work:

Anacortes Pulp Co. (Coos Bay Pulp Corp.), Anacortes, Wash.;

California-Oregon Paper Mills, Los Angeles;

Columbia River Paper Mills, Vancouver, Wash.;

Crown Zellerbach Corporation's mills at Camas, Port Angeles and Port Townsend, Wash., and Lebanon, Ore., and West Linn, Ore.;

Coos Bay Pulp Corp., Empire, Ore.;

Everett Pulp and Paper Co., Everett, Wash.;

Fernstrom Paper Mills, Inc., Pomona, Calif.;

Fibreboard Products Inc., mills at Port Angeles and Sumner, Wash., and Antioch, South Gate, Stockton, and Vernon, Calif.;

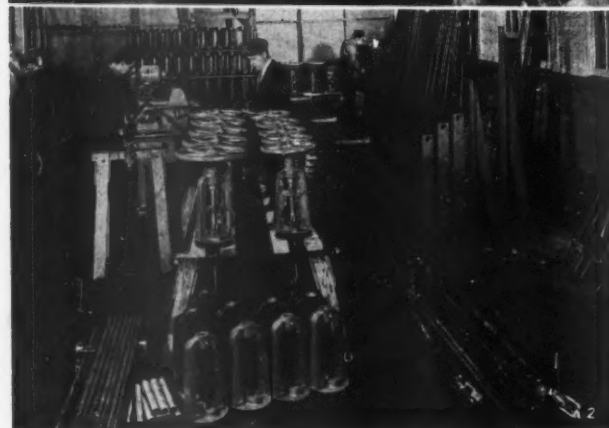
Hawley Pulp & Paper Co., Oregon City, Ore.;

Longview Fibre Company, Longview, Wash.;

Oregon Pulp & Paper Co., Salem, Ore.;

Pacific Coast Paper Mills, Bellingham, Wash.;

Pacific Paper Board Co., Longview, Wash.;



1. This big rudder assembly, product of the Crown Zellerbach machine shop at Camas, Wash., under direction of I. C. Shotwell and Ed Wightman, presented some of the most difficult machinery tasks confronted in all the war work done by the mills.

2. Remote control and valve operating mechanisms made in the Pacific Coast mills.

3. Visible here are products of the mills. Rudder assemblies, stern tubes and propeller shafts for such ships have been machined in their shops.

Puget Sound Pulp & Timber Co., Bellingham;  
 Rayonier Incorporated, mills at Hoquiam, Port Angeles and Shelton, Wash.;  
 Soundview Pulp Company, Everett;  
 St. Helens Pulp & Paper Co., St. Helens, Ore., and  
 Weyerhaeuser Timber Company (Pulp Division), Everett, Wash.

It takes pretty fine tools to keep a pulp or paper mill in operation. The mills wanted to do this work because they had some of the prime tools necessary for it. But, more important, they wanted to do it because they had the engineers, master mechanics and draughtsmen who were capable of doing the necessary engineering work and of creating jigs and set-ups enabling the mills to do difficult jobs. Also, these trained men were able to break in green employees—many of them from other jobs in the mill—and to make them into A-1 mechanics in a remarkably short time.

It is to these engineers, master mechanics and draughtsmen that much credit must go for the success of the plan. They went at the job with enthusiasm and—to use a much overworked word—with patriotic spirit.

Small mills vied with large ones to head the list in the monthly summaries issued relative to the war work. The rivalry was on a fair basis because percentages of man hours worked in relation to capacity are what counted. For example, the Crown Zellerbach mill at Lebanon, Ore., one of the smallest ones in the organization and in an out-of-the-way place to get contracts from the shipbuilders and big foundries, was—nevertheless—the leader in the tabulation for many months. This mill had only a few small facilities but it showed less idle hours than any other in the association and the crew worked with keen interest and enthusiasm under direction of Ed Lechband, master mechanic.

Mention should also be made of the former Anacortes (Wash.) Pulp Company, now one of the Coos Bay Pulp Corporation plants, which was shut down last fall by the government because of the lack of logs. Although the mill itself has been closed since then, Jesse R. Lewis, the superintendent, has kept the machine shop going to do this war work. On some occasions, he put on overalls and operated machines himself in order to get the work out.

Some of the big mills, such as the Crown Zellerbach plant at Camas and the Longview Fibre Company, were able to take large, heavy and difficult work because they built in their own shops at their own expense, equipment to do that type of work. Camas, with 18 prime tools, and its affiliated plant at West Linn, with ten, have the most prime tools.

Here is a partial list of the products of these machine shops:

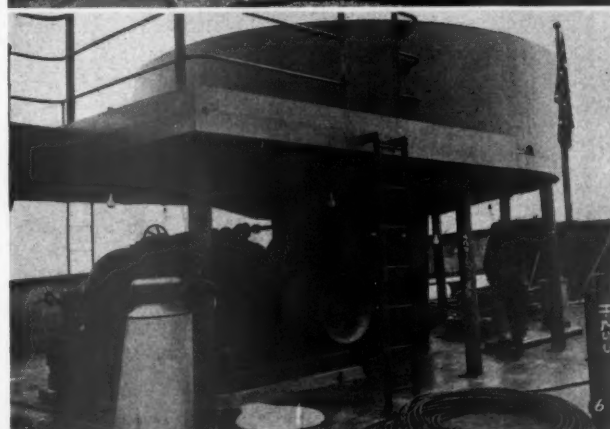
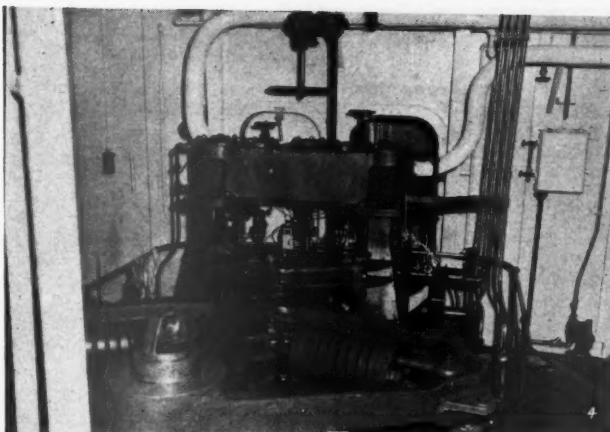
Thirty ton cranes for shipyards and other war plants, huge rudder assemblies, stern posts, gasoline, oil and water valve manifolds for BB3 aircraft carriers, catapult tracks, columns and deck plates for BB3 carriers, 1,000-lb. tiller arms, anchor windlasses, cargo winches, engine parts and propeller shafts for Liberty ships, invasion barge winch parts and big ramp gate racks, tail and intermediate shafts for army tugboats, steering gear parts for destroyers, paravane gear and assembly, fair lead rollers and other parts for tankers, boat handling parts, cable cutters and rudders for aircraft carriers, anchor windlasses and winch drums for navy ships, timber joiners for shipbuilders and a wide variety of valves, flanges and gear parts.

4. A Liberty ship steering engine. Many parts of this engine were machined in the mills.

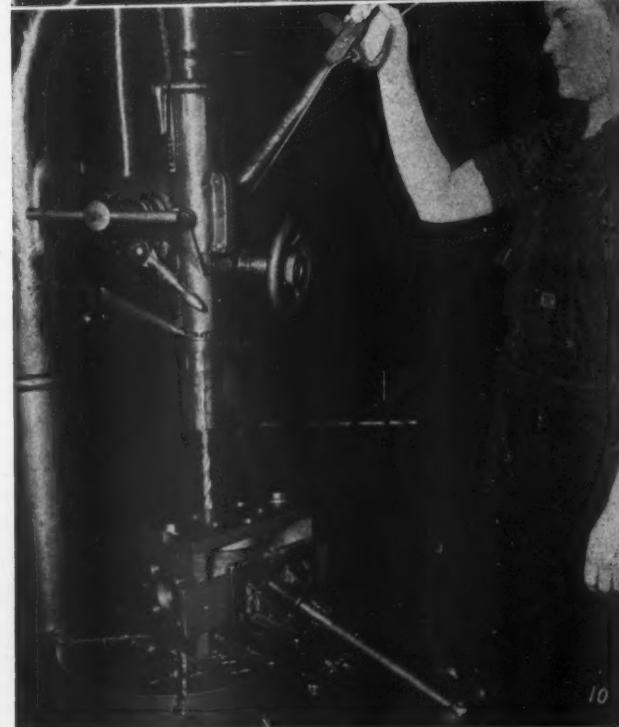
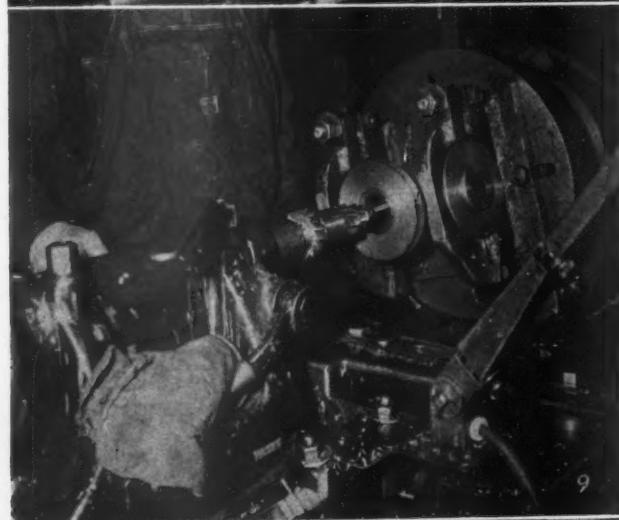
5. Liberty ship anchor windlasses. For these, the shops finished side frames, main and intermediate shafts.

6. An anchor windlass in place in the bow of a Liberty ship, below the circular gun mount.

7. Boring the upper rudder stock neck bearing for a Liberty ship at West Linn, Ore. Time to set the work up—15 to 20 per cent of total time—was saved by means of the jig with which the bearing is bolted to lathe feed. Pre-positioned bolts to fit the holes in the bearing and cap are the reason for the saving.







But all the war work of the machine shops is not for ships and shipbuilders. Fernstrom Paper Mills at Pomona and Fibreboard at Vernon in California built some accurate jigs for the airplane industry to assist in production of war planes. Longview Fibre and Fibreboard mills at Antioch and Stockton have done special work for the new synthetic rubber plants, including the production of gas and steam nozzles for synthetic rubber processes.

In the Olympic peninsula area the work of five Rayonier and C-Z mills at Port Townsend, Hoquiam, Shelton and two at Port Angeles, were coordinated under direction of Meder Johnson, resident engineer for Rayonier at Port Angeles. He soon placed them on a 24-hour day, with one shift devoted to plant maintenance and the other two to war work. Mr. Johnson and his staff showed ingenuity in overcoming obstacles.

A baling press ordinarily used for pressing bales of pulp at Rayonier's Port Angeles shop was rigged up to press steel flanges, first heated in an improvised oil heated oven. A home-made milling machine was rigged up to mill keyways. At Port Townsend three horizontal boring machines, home made, operated by pneumatic drills, machined to very close tolerances.

And at the Soundview Pulp Company in Everett, work done on crane parts was not just a machining job. Much preliminary draughting and other work had to be done.

Next are four pictures showing the finishing of a 1½-inch high pressure steam globe valve at Columbia River Paper Mills, Vancouver, Wash.:

8. Two line flanges are turned to the proper diameter and the outside and inside surfaces finished. There are four separate types of lathe cuts made in this operation and a time saving kink developed here by Bob Childers, master mechanic, is a turret tool holder. This is the assembly topped by a handle like a streetcar motorman's control. A part turn of the handle loosens the turret tool holder so the proper tool may be swung into position for the next cut. Outside, back facing, front facing and outside facing cuts are made. Tools, when locked in positions, are at exactly right angles for cuts. Without this turret holder, a new tool holder or new cutting tool would have to be inserted and adjusted for each cut.

9. The valve is prepared for the stem and bonnet. The flange is turned and a three-step cutter prepares it for threading and the insertion of the hard valve seat. The cutter is shown, about to be inserted. Notice also, the jig with which the valve is chucked to the headstock. The flange which you see to the right has been turned in the operation shown in picture No. 8.

10. The valve clamped in the jig in which it is drilled. The holes drilled in the face of the jig automatically center the drill at the proper spot for the hole in the valve flange. As can be seen the jig is merely turned over to put it in position to drill all three flanges. Elsie Holley is the operator.

#### ON NEXT PAGE:

11. The holes in the flanges are being spot faced in another drill press operated by Irene Schneweis.

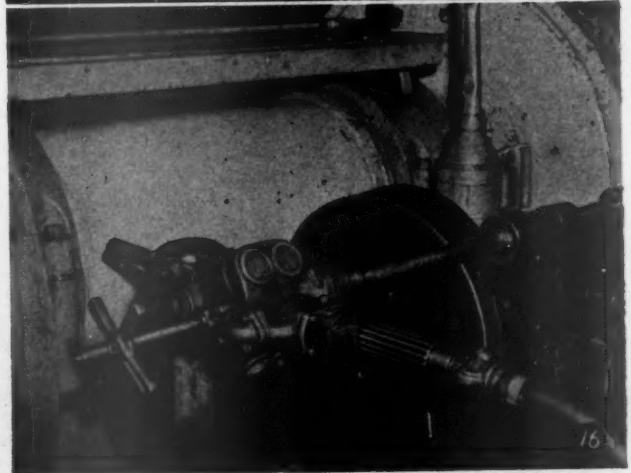
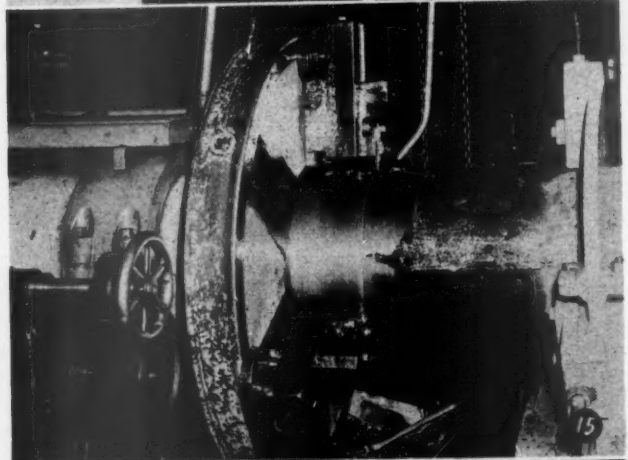
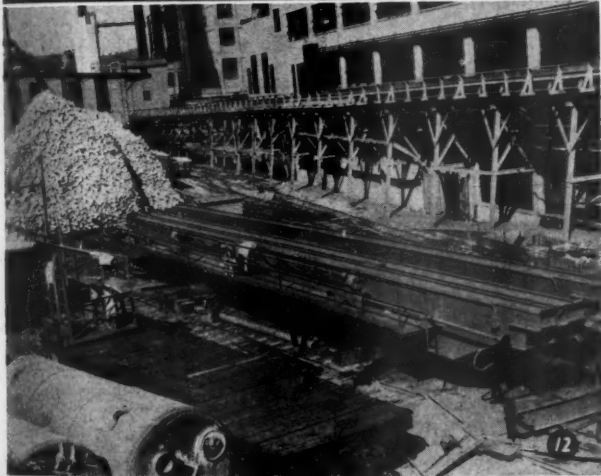
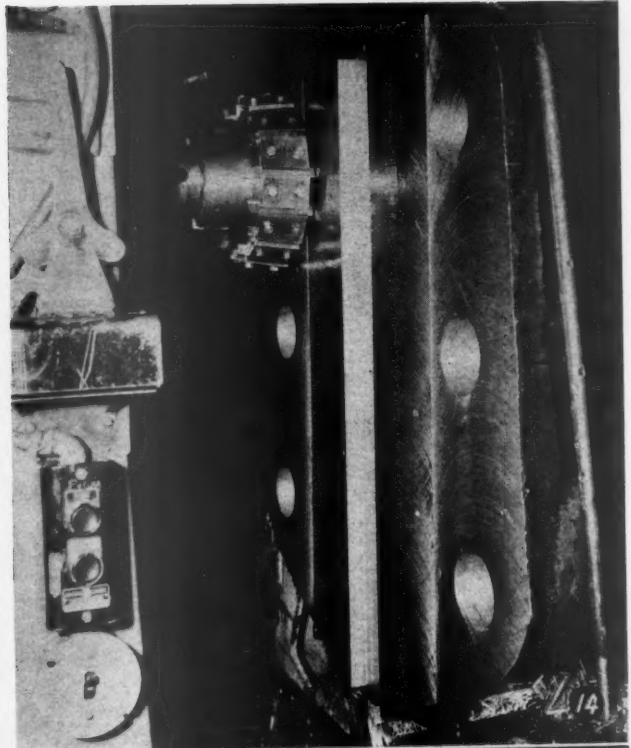
12. Huge cranes for shipyards were made at Camas, Wash., and are shown here on the mill grounds. Bridge crane of 25-ton capacity with 75-foot span and five-ton auxiliary crane are shown.

13. Operations on palm of rudder stock made for tankers. An old mill calendar stack was used for the frame of the machine made in the Camas shop.

14. Face of the palm after machining and the cutter by means of which the facing is done. Four operations are accomplished on this machine without removing the rudder stock. The face of the palm is machined, the key way cut, the holes bored and then backfaced. The cutter head shown here was designed and constructed in the Camas shop.

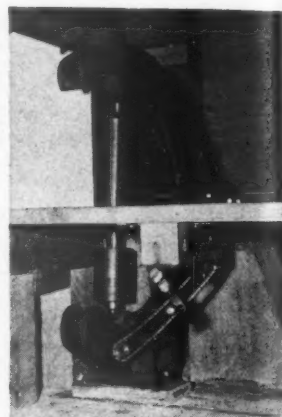
15. A large pipe threading machine in the Camas shop was converted to turn the rudder stocks used in tankers. Here is a close-up view of the operation. The rudder stock is clamped to a specially constructed bed and fed into the hollow headstock of the machine. After turning, the end of the stock is drilled, using a special drill chuck held in the headstock.

16. This shows the ingenious use of an air drill to rack the bed and rudder stock back out after the cut is finished.





A pulp-mill machine shop turned out this variable-angle joiner for planing ship timbers up to 12-inch thickness.



An unusual job done at Puget Sound in Bellingham was a variable-angle timber joiner for planing ship timbers up to 12-inch thickness. (see picture above).

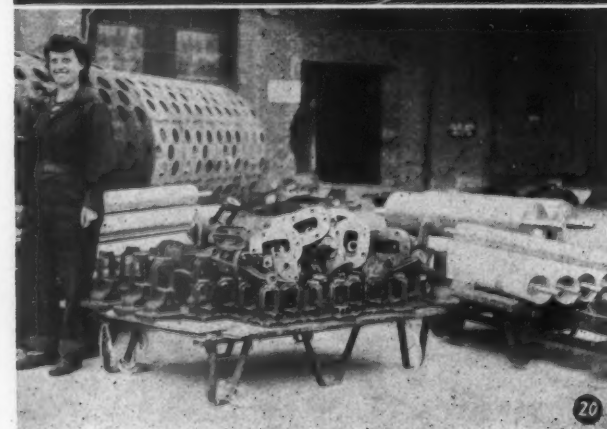
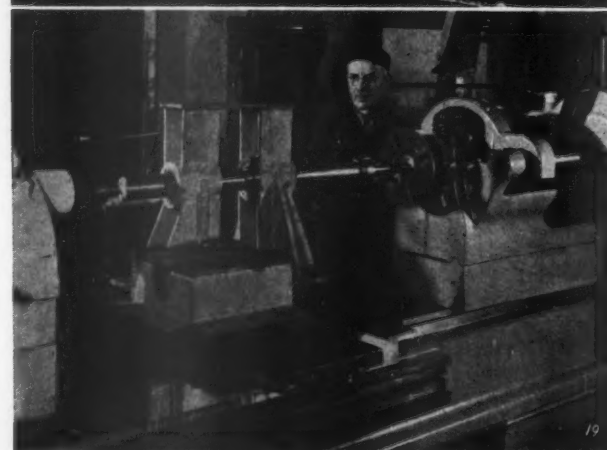
Ribs on large wooden ships are of variable curvatures and the orthodox method of framing these timbers is to have them hand-finished by five or six men. With this joiner, one man does in an hour what these five or six men would take several hours to do.

The timber is fed through the joiner by a transverse feed mechanism, the operator turns the tilting crank and a worm revolves the tilting head to the required bevel indicated by template. At the top of the plate there is a vernier reading from 0 to 20 degrees in both directions. The arbor is mounted on the inner ring, with a circular outer ring forming a bearing surface. The cutter head is driven with a flat belt by a 10-h.p. 1,800, r.p.m. motor, mounted in a vertical position. The cutter head travels 3,000 r.p.m.

A materials-saving salvaging job was done at Everett Pulp and Paper where a stock of old railroad car axles were bought from a junk dealer and were machined down to 4-inch axles (18 inches long) for cranes. Cold rolled shafting would have to have been used if these axles were not acquired. This machine job did a neat trick of time-saving by setting up two big jobs on the same 36-inch planer. At one end a day man works on 1,000 pound tiller arms for Liberty ships and at the other end a night man works on other machinery. One end is idle while the other is worked and time in setting up or breaking down the jobs is thus saved.

More than the ordinary amount of ingenuity in setting up jigs was shown in the machine shop at Columbia River Paper Mills in the process of finishing a 1 1/4-inch high pressure steam globe valve. A series of four pictures with this article (pictures No. 8, 9, 10 and 11) shows how this is done. A turret tool holder makes the tool changing operation so simple it is almost automatic. Without it, a new holder or cutting would have to be inserted and adjusted for each cut. The turret holder reduces the operation of turning these valves from about one hour and a half to about one half-hour for each valve.

A time-saving device at the West Linn, Ore., mill, which bolts the upper rudder stock neck bearings for Liberty ships to the lathe, is shown in picture No. 7. Another achievement at West Linn was in converting a milling machine to do interior facing cuts on parts for reciprocating engines as shown in pictures No. 24 and 25.



17. A general view of boring in a rudder stock. This is the operation shown in a close-up view in picture No. 15.

18. Finishing a stern tube on an improvised boring mill at Camas. A home-made lathe of concrete is shown here, which saves vital war materials.

19. Gus Erickson, lead machinist at the Weyerhaeuser pulp mill's machine shop in Everett, Wash., is working on a combination motor base and bearing pedestal used on landing barges. A home-made boring bar carries tools for rough cut, finish cut and facing cuts on the inside faces of the hubs.

20. Elaine Ramos is one of the machinists in the shop at the Fibreboard Products Inc. plant at Antioch, Calif. Shown in the picture are large cable drums and valve bonnets for ships. The rolls on the truck are for synthetic rubber plants, also a vital war enterprise.



An example of team work between the Vancouver, Wash., and Salem, Ore., pulp and paper mills was shown in the production of valve seats for 16-inch angle valves. These are turned and threaded in Salem and installed in the valve body at Vancouver (see picture No. 27).

The management of the Vancouver and Salem mills was anxious to cooperate in the war work to the fullest extent possible and wanted an experienced man to coordinate the work at the two mills. The man selected for this job was Leonard Leach, who worked in the Bremerton navy yard machine shop in the last war and was a former Weyerhaeuser master mechanic. He is devoting full time to his work as coordinator.

A somewhat similar arrangement for the Crown Zellerbach mills at Camas, West Linn and Lebanon was made when Roy Packer was promoted from the purchasing department to take over the procurement of work for these three plants, a job he has carried on energetically at all times.

Ingenuity was shown in several ways at Camas. A used paper mill calendar stack was salvaged to make a milling machine for operations on the palm of tanker rudder stocks. Four operations were accomplished on this machine without removing the rudder stock.

This and other ingenious use of jigs and salvaging of materials at Camas is shown in pictures 13, 14, 15, 16, 17 and 18.

A large pipe threading machine was converted to turn tanker rudder stocks (No. 15). This was done by removal of pipe dies and the installation of tool holders. The rudder stock was clamped to a specially constructed bed and fed into the hollow headstock of the machine.

How the machinists at the Weyerhaeuser mill at Everett rigged up a home made boring bar is shown in picture No. 19.

Several useful pieces of equipment made at Longview Fibre Company are shown in photographs Nos. 21, 22 and 23, showing a portable hoist, a jig tailor and supports to hold large yoked valve bonnets in a lathe.

There are many other cases of ingenuity in the machine shops which will be reported in the columns of future issues of this magazine.

Claude Stitt, plant engineer at Antioch, is another man in the industry, given supervision over work of more than one mill in being assigned the task of coordinating the machine shop war work at both the Antioch and Stockton mills of Fibre-board Products Inc., where big cable drums are being machined for the Navy and rolls and slide blocks for Liberty ship engines. See picture No. 20.

Teamwork is the motif of this work up and down the coast and another example, not unimportant, is shown in work being done in the joint power plant which serves Rayonier's pulp mill and the two lumber mills at Shelton. Here special heating tests are made on valves which are finished in machine shops in other cities.

In justice to what has been accomplished in the pulp and paper mill machine shops, mention should be made of the remarkable speed in which green hands were trained to become expert mechanics, able to handle work with tolerances allowed as infinitesimal as .001 plus or minus.

Evening trade classes inaugurated at Camas by the local school district with the cooperation of the mill back in June of 1941 began to pay dividends. For in this trade school were classes for welding and machine shop work.

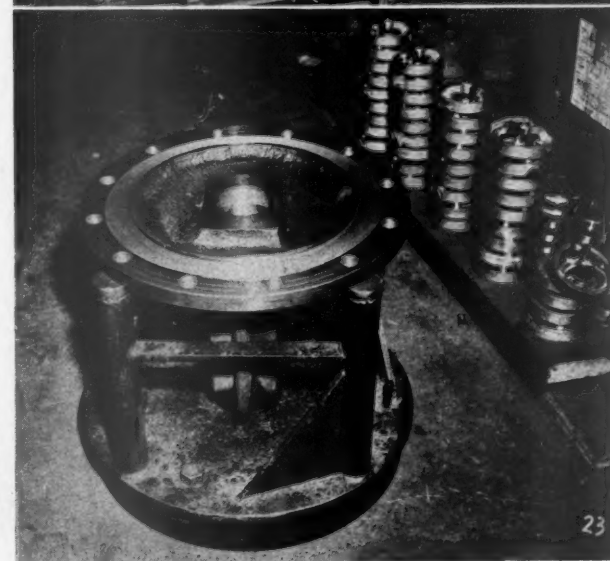
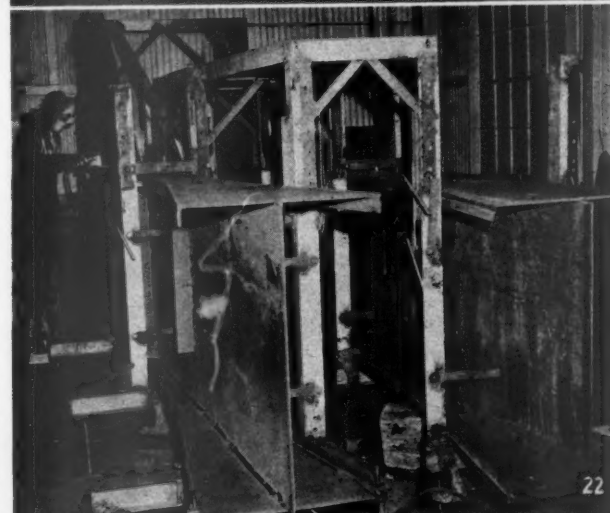
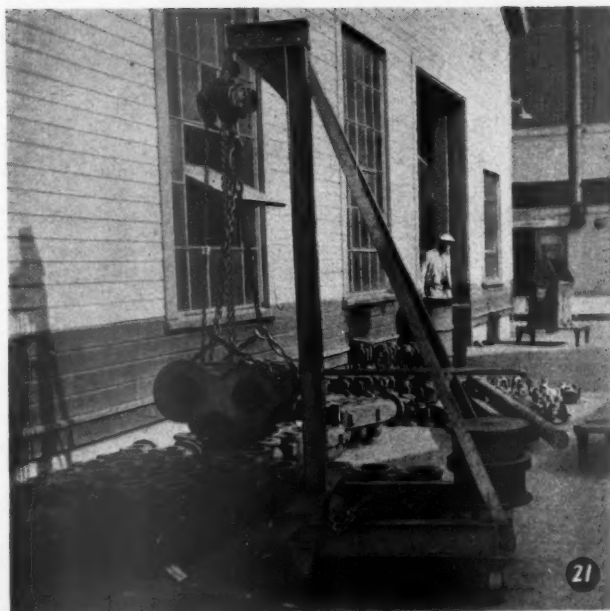
These reports from various mills gives an idea of where machinists came from to do this work:

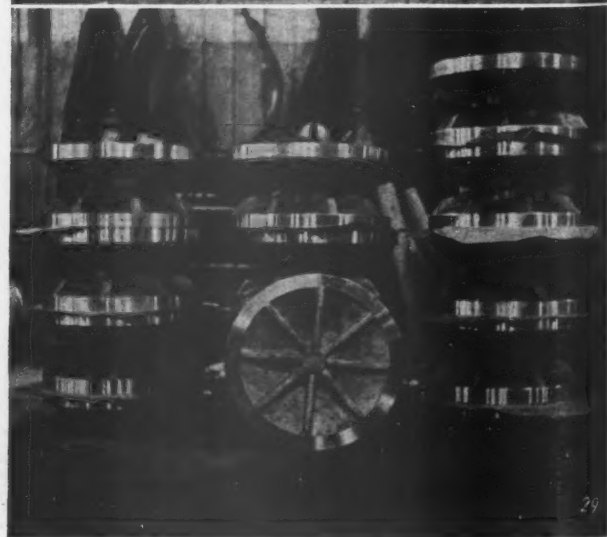
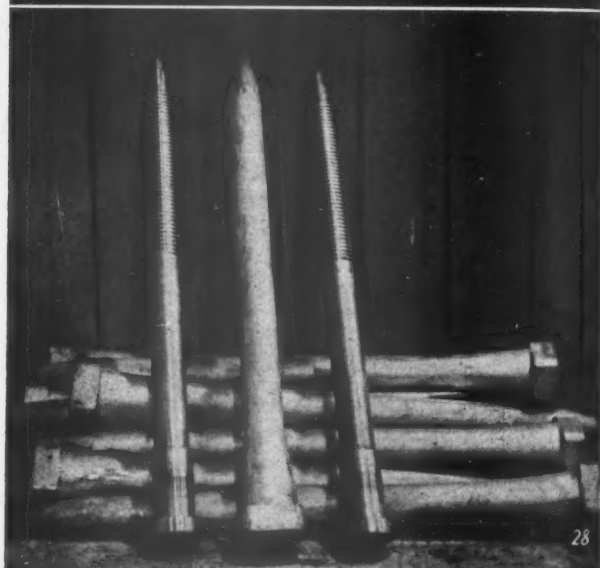
At Shelton an oiler from the mill and a man from the chipping plant were put on lathes and soon became fine work-

**21.** Transportation is important in war work, whether for long hauls or short. This portable hoist, made at Longview Fibre Company's shop, moves materials from stock pile to machine or from one machine to another. Its overhanging feature allows the piece to be set down in the machine table.

**22.** For accuracy and speed of welding, nothing is more helpful than a jig tailor made to fit the job. When these steel columns for aircraft carriers are welded in quick order and removed from the jig, they will be square and true to an exact dimension and each succeeding column will be a perfect duplicate of the ones in the picture. These are done at Longview Fibre Company.

**23.** Large yoked valve bonnets are hard to hold in a lathe due to the large flange which must be turned while being supported in the chuck jaws by the small end of the yoke. A face plate having a short pin to center the yoke and four posts to support the flange will take care of this turning job nicely. A long bolt through the spindle of the lathe and through the hole in the yoke, the Longview Fibre shop discovered, will pull the flange solidly against the posts and will make a quick setup job.





men. A former evaporator plant man was another successful trainee.

At Port Angeles, the bulk of machinists came from departments in the mill, but there were some from outside—a government employee, a laundry truck driver, an automobile mechanic. At Port Townsend, a mailman and garage mechanic besides plant men, including a painter, a carpenter and beater operator were initiated and passed tests with flying colors.

Hoquiam's pulp mill turned up a scoutmaster, a logger and a messenger boy as machinists-to-be.

In the mills in the Everett-Bellingham area, several millwrights, a warehouseman, a blacksmith's helper, a yard crew man, an evaporator operator and a ruling room employee were transferred successfully to machines.

Half the crew at Salem and nearly everyone in the Vancouver, Wash., shop were young men who came out of the mill to learn machinist work. They included men from the beater room, the bull gang and the filter plant.

At the Hawley Pulp & Paper Company mill, the Oregon City chief of police came down in spare hours to run a lathe. So did the local undertaker and other business men.

The manpower problem was a serious one in many of the

mills. This was brought home to the industry particularly at the St. Helens Pulp and Paper Company, St. Helens, Ore., where Max Oberdorfer, Jr., after undergoing an operation to overcome a physical disability, was called to military service. The younger Mr. Oberdorfer, son of the president of the company, had personally taken over direction of the machine shop work there and his presence was going to be missed.

Several of the mills trained women to do the machine shop work. Four women were employed in the shop at the Hawley mill. Pictures with this article show women at work at the Vancouver, Wash., and Antioch, Calif., mills. Their supervisors said they were easily trained and proved just as competent as men.

But it took some old heads as well as old machines to do the excellent job that has been done on this war work. For example, a 73-year old machinist came out of retirement at Salem to help in the work. He teamed up with a forty-year old lathe in the Salem shop. Ill health recently forced him into retirement again but he was in there pitching as long as he was physically able. And now another has picked up his torch. That's the American war spirit—the spirit that must bring victory.

#### ON PRECEDING PAGE:

24. The Crown Zellerbach shop at West Linn converted a milling machine to do interior facing cuts on the valve bridges of steam reciprocating engines used in Liberty ships. The vertical head, shown with the operator's hand on the adjusting screw, was removed from its place on the frame of the machine, to the right of the picture. It was then attached to a separate assembly and the assembly bolted to the bed of the machine. Power for the vertical cutter head in its new position was supplied by the electric motor shown in the center of the picture. Reassembled, the vertical head travels into the cut by means of the feed on the milling machine bed instead of the work moving into the cutter as in the conventional use of the machine. A fixed bed was constructed on the floor under the vertical head in its new position and the work then clamped to this bed.

25. Closeup of the cut made by the converted milling machine at West Linn. An ingenious thrust bearing to keep

the end mill cutter from leading out of the cut was made by pressing a ball bearing over the shank of the cutter. A guide bar was then clamped to the valve bridge and lined up parallel with the line of cut. The outside of the ball bearing race then presses against this guide bar and holds the cutter in perfect alignment.

26. The complete job of making these four inch high pressure globe valves is done at Oregon Pulp and Paper Company, Salem.

27. Valve seats for 16-inch angle valves. These are turned and threaded in the Oregon Pulp and Paper Company shop in Salem and they are installed in the valve body at the Columbia River Paper Mills at Vancouver, Wash. This shows the casting being turned.

28. Ten-inch valve stems, the rough casting and finished, ready for installation. Another Salem product.

29. Valve discs, machined entirely in the Salem shop.

THE LETTERS below and on the following pages speak for themselves. All of them refer to the machine shop war work except the one below, on the right.

**Western Gear Works**  
417 Ninth Avenue South, Main 0063  
SEATTLE, WASHINGTON

May 6, 1943

To the Editor  
Pacific Pulp & Paper Industry  
71 Columbia Street  
Seattle, Washington

Dear Sir:

In my opinion, the manner in which the Pacific Coast pulp and paper mills converted their machine shops from standard repair plants to productive units, cooperating with, and supplementing the productive capacity of our Northwest machine shops is significant and outstanding. Therein is again demonstrated the ingenuity and patriotism of the American business man. Naturally, by their very makeup, our Pacific Coast pulp and paper mills have contributed generously to the war effort in the manufacture of their standard essential products. However, it is in this conversion that they are particularly impressive.

Here at the Western Gear Works we have utilized to a great extent the personnel and machine tools of the various pulp mills when the work was properly chosen for the equipment available. The results have been most satisfactory. It is a pleasure for us to state that without their help and cooperation we would never have been able to make the delivery records which have been generally acknowledged by the Navy through the presentation to us of the Army-Navy "E" pennant, which we proudly fly.

As one of the first who encouraged the pulp mills in their conversion, and one who has used their services, both at this plant and at the Webster-Brinkley Company, I offer my unqualified congratulations to the men who run the machines and management who set the policies. I would be pleased to have you use this expression in any manner you wish.

Yours truly,  
W. J. Brinkley

TJB:fr

**OREGON ELECTRIC STEEL ROLLING MILLS**  
5250 N. W. Front Avenue  
Portland, Oregon  
May 2, 1943

Pacific Pulp & Paper Industry  
71 Columbia St.  
Seattle, Wash.

Dear Sir:

The Oregon Electric Steel Rolling Mills which is being built in Portland, Oregon to produce steel for the U. S. Navy and the Maritime Commission is rapidly reaching its completion. When in operation, it is going to be 100% defense.

In the building of this plant and in the building of the machinery that will go into the plant, the various pulp and paper mills in the vicinity have been of great assistance in supplying us with vital materials that are very hard to obtain and in some cases almost impossible to get. These pulp and paper manufacturers were very far-sighted in getting their machinery part stocks and from these stocks we have been able to get material to complete this all-important job. Without their wholehearted support and cooperation we would have been delayed in the production of this steel which is vital to the country at this time.

Yours very truly,  
W. R. Smyth

OREGON ELECTRIC STEEL ROLLING MILLS  
William R. Smyth



## ELECTRIC STEEL FOUNDRY COMPANY

2141 N.W.

Twenty-fifth Ave.



Portland Oregon

May 2nd, 1943

Pacific Pulp and Paper Industry  
71 Columbia Street  
Seattle, Washington.

Gentlemen:

We have been advised that the May issue of the Pacific Pulp and Paper Industry will feature the War Work that is being done in the Pulp and Paper Mills located on our Pacific Coast. Because we have been one of the largest suppliers of sub-contracted machine work to the pulp and paper mills, we are aware of the excellent job they are doing.

The pulp and paper mills should be commended on the patriotism, ingenuity and determination that they have demonstrated. There have been many problems to overcome, such as the training of competent machinists and the adaptation of existing equipment to unusual or difficult production work. These problems are being rapidly overcome and we feel the usefulness of the mills is growing in leaps and bounds.

Our success can in part be measured by the help we have had from the mills. Our gratitude can best be expressed by saying, "They are helping us do a job". May everyone's efforts continue to grow and become more valuable until Victory is achieved.

Very truly yours,

ELECTRIC STEEL FOUNDRY COMPANY

*C. Y. Swigart Jr.*  
President

C. Y. Swigart, Jr.  
ccy

## OREGON SHIPBUILDING CORPORATION

PORTLAND, OREGON

May 3, 1943

FILE REFERENCE

A25.9

Pacific Pulp and Paper Industry  
Seattle  
Washington

Gentlemen:

At this time when so many manufacturing plants are receiving merit flags from the Army, Navy and Maritime Commission I think the members of the Pulp and Paper Industry should receive some mention for their assistance in the war effort.

The paper mills in this area have come through in fine shape in helping to overcome the shortage in machine tools and machinists. They are not only machining items under direct contract from our yard, but are doing a great deal of work on ships material for other manufacturers, thereby helping us maintain an ever increasing delivery of ships.

We want you to know that the cooperation which we have received from the Pulp and Paper Industry is deeply appreciated and we thank them for it.

Very truly yours,

OREGON SHIPBUILDING CORPORATION

*Don J. Jaxheimer*  
DON JAXHEIMER  
Chief Expediter

DJ/hl

## SCHMITT STEEL COMPANY

INDUSTRIAL STEEL WORKS



WM C SCHMITT

DEACON BIDS  
2407 N W 25TH AVENUE  
PORTLAND, OREGON

May 3, 1943

Pacific Pulp and Paper Industries,  
71 Columbia Street,  
Seattle Washington

Gentlemen:

In connection with contract requirements which we have from the Maritime Commission, we have found it necessary to call on outside industries having machine shop capacity. In seeking these additional facilities, we have had occasion to contact various members of the pulp and paper industry, and have found them to be extremely cooperative. As a result, we are now producing for the Maritime Commission large quantities of exclusively by two of your member plants. Without this aid we would have been unable to have accepted the contracts in question. We can also state without qualification that the class of work done by these shops for us has been of an exceedingly high character and has met the Maritime Commission specifications in every respect.

Yours very truly,

SCHMITT STEEL COMPANY

*W. C. Schmitt*  
W. C. Schmitt

WCS:M

## WEBSTER-BRINKLEY Co.

DESIGNERS AND MANUFACTURERS OF  
MACHINERY

SEATTLE WASHINGTON

MAIL ADDRESS: P. O. BOX 1127  
CABLE ADDRESS: WEBSTER  
PLANT: 351 ALASKA STREET

GEORGE GUNN JR. PRESIDENT  
THOMAS J. BRYAN VICE PRESIDENT  
HAROLD N. HARTMAN GENERAL MANAGER

The Army-Navy "E" Awarded  
for Excellent Performance in  
Production of Vial W in Material

The Maritime "M" Award  
Awarded for Outstanding  
Work in Vial Ship  
Production

May 3, 1943

PACIFIC PULP & PAPER INDUSTRY  
71 Columbia Street  
Seattle, Washington

Gentlemen:

A year ago, immediately after members of the Pacific Coast Association of Pulp and Paper Manufacturers decided they wanted to utilize their machine shops in war work, we associated ourselves with them in this patriotic undertaking.

We found management and personnel of the mills were fired with a desire to go ahead on the biggest possible scale in helping to break a fast-developing bottleneck in output of machinery parts for warships and cargo ships. Naturally, they had little conception of production line technique in machine shops, but we found them ready and anxious to work with our engineers and very soon they had transformed their plants from a maintenance to a jobbing basis. Some of the mills have not only worked their own machines to capacity but have unselfishly sought and farmed out work for small local plants in their towns.

Hats off to the Pacific Coast pulp and paper industry. Without its help, the Army-Navy "E" and Maritime "M" pennants would not be flying over Webster-Brinkley Co. today.

Very truly yours,

*George Gunn Jr.*  
George Gunn Jr.  
President

GGJr/KB



May 14, 1943

Pacific Pulp and Paper Industry  
71 Columbia Street  
Seattle, Washington

Gentlemen:

We wish to thank the Pacific Coast pulp and paper industry for the splendid service which you, as subcontractors, have given us in connection with making structural plate and fabrication for ships, and machining of shafting.

This work has been accurate and of fine quality and all promises of delivery have been well kept. We have been particularly pleased with the interest and zeal you have shown in getting out these jobs for us, as we have noted that every job has been followed through assiduously.

We want you to know that we are most appreciative for your cooperation.

Yours very truly,

ISAACSON IRON WORKS

H. C. Isaacson, President



\* Our Fighting Flags \*

HCl:G

## Machine Shop War Work in B. C. Done Mostly at Powell River

Two factors have adversely affected British Columbia pulp and paper mills in their efforts to utilize idle plant capacity for the manufacture of war equipment—relative remoteness of location and shortage of labor.

Powell River Company is about the only organization in the pulp and paper field in the west coast province that has shared fairly extensively in sub-contracts. The orders were placed through Canadian Sumner Iron Works, Ltd., and Heaps Engineering Company of Vancouver and New Westminster, both of which companies were prime contractors for ship equipment for Wartime Merchant Shipping, Canada's government-owned and operated ship corporation, and the Canadian ministry of munitions and supply.

Canadian Sumner has been building steering engines and other steering apparatus for steel cargo ships being built to the order of Wartime Merchant Shipping. About a year ago when Powell River Company expressed willingness to assist in the war effort by accepting sub-contract arrangements were made with Canadian Sumner to plane bases for the steering engines, to machine valves and other parts of the steering mechanism. Powell River Company's machine shops did the work according to Canadian Sumner specifications.

Powell River Company has also been doing some work for Heaps Engineering Company's pump contract with Wartime Merchant Shipping, Heaps providing the castings and the paper company carrying out the machine work.

Pacific Mills, Ltd., at Ocean Falls, B. C., has done some foundry work for war contractors, but the scope of its operation along that line has been limited by scarcity of skilled machinists and the distance between the mills and the center of west coast industrial activities.

"British Columbia's pulp and paper mills have a big disadvantage to overcome not only because prime contractors naturally prefer to do business with sub-contractors adjacent to them, but because the paper mills' location makes regular supervision by government inspectors difficult," THE PACIFIC PULP AND PAPER INDUSTRY was told by W. C. Blundell, British Columbia representative of the sub-contract division of the Canadian department of munitions and supply, at Vancouver.

Mr. Blundell said that while west coast machinists were versatile and ingenious by the very nature of their daily routine in the pulp and paper industry, they were not equipped to handle precision work. If the mills were located closer

## Pulp, Paper and the War

"If all of the pulp and paper mills in the world stopped operating tomorrow, the war would come to an end in less than sixty days.—Without pulp the guns would have to stop firing.—There would be no paper for blueprints, drawings, maps and orders. There would not even be paper available for printing currency and government loans for financing the war effort."—Excerpt from "Paper; The Lifeblood of Civilization," by R. A. Hayward.

I praise the man that first did paper make,

The only thing that sets all virtues forth,  
It shoes new bookes, and keeps old works awake,

Much more of price than all the world is worth:

It witness bears of friendship, time, and troth,

And is the tromp of vice and virtue both;

Without whose help no hap nor wealth is won,

And by whose ayde great works and deeds are done.

—A.D., 1588 by Thomas Churchyard.

to Vancouver there was no doubt that more orders would be available for them.

But lack of men is basically the handicap, according to Alfred Ellis, chief engineer of the sub-contract division, who has had practical experience in the pulp and paper industry.

"The problem of an organization such as Pacific Mills in its own maintenance program is difficult," said Mr. Ellis. "The mill is located 400 miles from Vancouver, which means that it must maintain an extensive line of replacements and spares."

Mr. Ellis recalls the situation at Pacific Mills, Ltd., a few years ago when Australia was shipping gumwood to Ocean Falls for experimental work in connection with a newsprint pulp manufacturing process being developed for the Tasmania mill designed by the late Percy Sandwell. The fact that the gumwood logs sank as soon as they were dumped over the ship's side and required the service of about eight husky men to move a comparatively small stick was only incidental to the main difficulty of obtaining special bleaching fluids and equipment for handling the unusual job. Planes flew back and forth between Ocean Falls and Vancouver carrying various requirements. The difficulty was increased by the distance of Ocean Falls from the chief distributing center, and a similar set of conditions applies today.

In eastern Canada the pulp and paper mills have been able to contribute to a much greater extent to the sub-contract program because of their regional concentration and proximity to other factories.

## An International Development Program For North Pacific Region

*The cover drawing of this issue graphically portrays the key position of Western United States, Western Canada and Alaska in future world affairs. New highway, air and river transportation routes and new seaports already herald the dawning of the new era of development.*

*A research program already has been undertaken by the United States and Canadian governments. The pulp and paper industry figures prominently in the joint study. A discussion of its part in the picture begins on the next page.*

THE outbreak of war has changed overnight the comparative isolation of the North Pacific Region to a key position in the world. Hundreds of millions of dollars are being expended for defenses, the construction of highways, airways, and pipe lines traversing the immense stretches of Western Canada and Alaska. While this development work is now being rushed through to meet the immediate threat of invasion, there will be much of permanent benefit in opening up heretofore inaccessible areas.

The two governments of Canada and the United States have just created a Joint Economic Committee to undertake a cooperative study of the North Pacific Area—Alaska, Yukon Territory, Northern British Columbia and the Pacific Northwest States. This region embraces about one million square miles. Early in April, a permanent office to direct the study was established at Victoria, B. C., in charge of Russell K. Odell, assistant to Dr. Charles Camsell, deputy minister of mines and resources for Canada. Odell emphasized that the present activity is concerned with research, not development—that there is no question or thought of joint administration of any territory.

A statement previously issued by B. H. Klizer, who was first authorized by the Washington State Planning Council to explore the possibilities of collaboration of the United States and Canada in the study based on memoranda by J. C. Rettie, J. L. Fisher, George Sundberg and R. F. Bessey, gives an outline of the proposed joint international research program.

The region to be studied is one of the large undeveloped sections of the world, in which we find a challenge to resource development and settlement; where a strong community of interest has already provided a framework and habit of cooperation, and where results may be expected that will serve as a demonstration of the fields, methods and possibilities of international collaboration.

From the standpoint of specific developmental projects of a physical character chief interest will be centered at present on Alaska, Yukon Territory, adjoining parts of the Northwest Territories and Alberta, and that part of British Columbia north of the Canadian National Railway. "Blanket" development is not contemplated—only certain strategic areas are likely to be considered for intensive development. In the study of overland transportation problems, however, a rather wide area of the western part of the North American continent, both in Canada and the United States, will be considered.

*A prime essential in the study is the active leadership of our own western citizens. We should ourselves join in dealing with the problems of the region, rather than to have our destiny ordered for us by governmental agencies and private organizations located on the other side of the continent.*

The major political divisions of the region, with their areas and population are:

	Area in sq. miles	Population (1940)
Alaska .....	586,400	72,524 (a)
Yukon Territory .....	207,076	4,687 (b)
British Columbia .....	366,255	809,203 (c)
Washington .....	68,192	1,736,191
Oregon .....	96,981	1,089,684
Total .....	1,324,904	3,712,289
Adjacent Area:		
Alberta .....	255,285	788,393 (c)
Idaho .....	83,557	524,873
Montana .....	147,138	559,466
Grand Total .....	1,810,884	5,585,011

Sources: Census of Canada (preliminary); U. S. Census. (a) 1939 figures, comprising about 41,000 whites and 31,000 aborigines.

(b) 1941 figures, comprising about 3,100 whites and 1,600 aborigines.

(c) 1941 figures.

Of all the great quarters of the continent the Northwest has been explored and settled most recently, and even now the process is nowhere near complete.

During the period 1860 to 1930, people were attracted to the Northwest by the substantial natural resources of the region—the furs, the forests, the fish, the gold and other minerals. In the depression years of the 1930's a large number of farm families from the drought-stricken Great Plains migrated into the Pacific Northwest states and into British Columbia in search of better land. A flow of workers to the war industries and military base construction jobs in the Northwest began in 1939 and has accelerated right up to the present time. Shipbuilding in Portland, Seattle, Vancouver, and Prince Rupert; airplane construction in Seattle; port improvements in Prince Rupert; aluminum manufacture in the Columbia valley; Army and Navy base construction at many inland and harbor points in the area; and road-building and airfield construction on a large scale are among these activities. The War Production Board order that all gold mining cease except for very small operations, will cause a considerable depopulation of interior Alaska. If Canada adopts a parallel policy, the same thing will happen in the Yukon and in northern British Columbia unless these men can be absorbed in other approved mining operations.

At the present time the North Pacific area is going through a period of remarkable change. From a region relatively undeveloped and sparsely populated, attractive in its northern part chiefly to frontiersmen, it is suddenly being transformed into one of the key areas of the world in terms of war strategy. In order to defend the populated parts of the North American continent against enemy thrusts from the far side of the Pacific Ocean and in order to lay the groundwork for purposes of offense across the North Pacific, Canada and the United States have embarked on a program of constructing vast improvements in the transportation facilities of the area.

The old problems of this northwest frontier will remain. There will still be insufficient capital for full development. The area will still depend on the industrialized midwest and east of the continent for many of its basic industrial materials. The high dependence on extractive industries, such as mining, timber, and fisheries, will not disappear. The climate will continue to impose sharp seasonal fluctuations in industry and the population of the area will for a long time still be small. Large amounts of wealth will continue to be drawn off to other parts of the world which are more



mature economically. Freight rates, whether by railroad, truck, ship, or plane, will remain relatively high because of the natural difficulties of distance, mountains, and climate. The transportation problem which so long handicapped the economic growth of the area, will not be completely solved by new construction.

However, the needs of the war are resulting in millions of dollars being invested in improvements to the transportation routes of the area. These may be sufficient, if put to effective use in the post-war period, to bring in their wake a considerable development of many of the resources all the way from the Columbia River to Alaska. If the northern part of the area has been held down in a vicious circle of underdevelopment (scanty population, inadequate transportation routes, high cost of living, etc.) then it is entirely possible that the circle will have been cut by the provision of a vastly more adequate transportation system.

The post-war world will in all likelihood need relatively undeveloped areas in which demobilized families can settle. The post-war world will need also vast opportunities for profitable public and private investment. The vigor and forethought which go into laying plans now for post-war development, in areas such as the North Pacific, will in some degree determine the whole future of that world. Courageous policies embodying international cooperation are an obvious necessity.

Almost all the large problems of the North Pacific region are common problems of Canada and the United States. On both sides of the international boundaries are wild, vast, undeveloped, and inaccessible areas. These are almost unoccupied and because of their characteristics can be considered as forming one of the truly "backward" areas of

the earth. This is particularly true for the more northerly sections—Alaska, Yukon Territory, northern British Columbia, and adjoining parts of the Northwest Territories and northern Alberta.

The general problem of this area is one of reasonable use of its resources for the benefit of both nations, for the benefit of the area itself and for a general increase in wealth and standards of living, not only in these nations but throughout the world.

Since the North Pacific front affords the closest approaches from America to Asia by land, sea, or air, the significance of the area from a trade standpoint and the opportunities in this field are very great. Potential advantages await both of our nations in the cooperative use and development of this front and its terminal facilities in connection with world reconstruction of physical facilities, industries, transportation, and commerce.

Looking at the more regional aspects of the trade problem, the area is one in which physical and political boundaries and barriers have in the past played a large part. The war has helped wipe these barriers away, at least for the present. An unparalleled opportunity will exist after the war for demonstrating that there can be amicable and "natural" solutions of such problems between nations. Better access across Alaska, to the Yukon Territory and to northern British Columbia from the sea, will be advantageous to Canada, and access to Alaska by way of western Canada will be advantageous to the United States. This suggests the increased use of free ports and shipments-in-bond, as well as a reduction of the formalities for persons wishing to cross the borders. In this last respect the United States might well conform more closely to Canadian practice.

## How Pulp and Paper Fits in the Program

THE pulp and paper industry figures prominently in the research program, as described above, of the joint economic committees of the United States and Canada.

Government authorities and others who have made careful study of available resources and possible markets, have long been convinced that the forests of the great northern area of British Columbia and of southeastern Alaska would some day become the mainstay of a flourishing pulp and paper industry.

In the past it had been viewed only as a further source of newsprint, which lends itself most readily to mass production technique. But now, in speculating on the post war era, industry leaders see possibilities of new fields to conquer by supplying the materials for a tremendously enlarged plastics industry. Also many paper substitutes for metals, introduced under duress of war economy, have made good in such a big way that there may be an increased demand for pulp and paper to make those products.

Although we can be sure the last word hasn't yet been spoken on the subject, it was recently reported from Washington that the President approved a plan to return the many government-owned munitions and war materials plants to private ownership after the war. Many of these plants have been built on the Pacific Coast and might be converted readily to manufacture of plastics, especially those already using nitrating wood pulp for munitions. Also, the Boeing Aircraft Company has announced its intention of going into plastics production after the war.

The development of new converting industries on the

West Coast would provide a need for expansion of the pulp industry in British Columbia and Alaska. The resource which has been developed most spectacularly during the past decade on the Pacific Coast is water power. Undeveloped power in this region is tremendous.

"The North Pacific International Planning Project," as outlined and issued by Mr. Kizer, and referred to in the preceding article as the basis for the study by the joint economic committee, states:

"The pulp and paper industry is already firmly established in British Columbia with operations extending northward along the coast as far as Ocean Falls. On the basis of a sustained yield cut (1,500,000 cords of wood per year), it has been estimated that Southeast Alaska alone could support a pulp and paper industry producing one million tons a year.

"This would support about 35,000 people at good standards of living and would provide, along with fishing and mining, a third major component of the economy of Southeast Alaska. The region has an estimated 800,000 horsepower of potential water power, of which only about 22,000 is developed.

"Further development of barge transportation through the inland waterways from Seattle and Vancouver to Skagway and Haines would assist greatly in the economic growth of the region by lowering the cost of inward shipment of food, machinery and fuel, and of outward shipment of ores and concentrates, lumber and pulp and paper."

Data in this statement on pulp production possibilities was obtained from "Pulp Timber Resources of Southeast

Alaska," by B. Frank Heintzleman, Regional Forester, Alaska Region, U. S. Forest Service.

### Many Loggers In Alaska

Interest in Mr. Heintzleman's article has been revived today because of wartime activity in logging Sitka spruce. This spruce is being brought out by the United States government for aircraft lumber and vital war production. The question has been raised as to whether these logging outfits might not remain in Alaska after the war to log for pulp mills and saw mills.

At the close of the war, the Alaska Spruce Log Program is likely to have a log producing plant with a possible output of 12 to 15 million board feet of logs per month. This will consist of one headquarters camp for 250 or more men at Edna Bay, and 10 or 12 smaller camps for 25 to 60 men, scattered along the protected waterways of that region and within a radius of 45 miles of the central headquarters.

All of the necessary logging equipment, camps, repair shops, booming grounds, tug boats and supply vessels will be part of the set up. In some cases, good truck roads leading back through the stands of hemlock and spruce pulptimber that were not logged for the ASLP, will be available, but in all other cases there will be a loss of pulptimber close to the beaches of the waterways and within working distance of the established camps.

Tremendous deposits of limestone, a basic material for sulphite pulp mills, have been found along the truck roads. The Kizer publication mentions high grade limestone available in Alaska and deposits easily accessible to tidewater in British Columbia.

Some Alaskan industry and business leaders see pulp and paper as a central postwar enterprise. Then higher grade spruce and hemlock might be used for veneer and plywood. Western red and Alaska yellow cedar might be used for special industries—shingles, boat lumber and furniture stock.

### Will It Be Practical?

These optimistic Alaska boosters are counting on plenty of ships to haul pulp and paper and other products to world markets. They contend that pulp and paper markets of the Orient and Australia will be as accessible to Alaska as the Pacific Coast states and British Columbia.

But to realize this dream, the United States will have to follow a different policy than it did after the last war. A merchant marine will require subsidies, intelligently distributed, and the Middle West will have to be sold on the idea of building a big United States merchant marine or it again will force this nation to abandon sea commerce to other countries as it did after the last war by vetoing shipping subsidies.

On the hard, practical side of the picture, it should be pointed out that a pulp industry in Alaska has been discussed for many years and so far has not been considered feasible. One reason for this decision was that a sufficiency of newsprint was attained some years ago with the newsprint industry of the United States and Canada operating at less than installed capacity.

An important point made by critics of the proposed post-war Alaskan industry is that the present logging operations by Uncle Sam, under pressure of war, are costing far in excess of what private operators could afford.

Some industry leaders contend the present era of high pressure boilers in pulp mills has decreased the importance of waterpower. They contend that Alaskan

## PACIFIC PULP & PAPER INDUSTRY

logs in large quantities could be towed to Puget Sound mills, for example, and be converted into pulp more cheaply than by the construction of mills in Alaska.

The school of thought that sees only low cost producers surviving in the postwar period are not optimistic over the prospects for a big pulp and paper development in the North Pacific region.

### High Grade Pulpwood

There is, however, no dispute over the contention that the forests of the North Pacific coastal region are most suitable for pulpwood. The coast forest is predominantly a mixed stand of western hemlock and Sitka spruce. It is estimated that 75 per cent of the commercial timber lies within 2½ miles of tidewater.

Sitka spruce is generally conceded to be the best pulping wood on the Pacific Coast. In the States, it is less used for pulp than hemlock because of the keen competition of sawmills for logs. In normal times in Alaska—after the present heavy wartime demand for aircraft spruce has abated—this competition is not expected to develop because the mixed hemlock-spruce forests are predominantly hemlock and probably never will be attractive for extensive spruce sawmill development.

The western hemlock as a pulping wood has long been ranked among the best in the world. Its high value has been fully established by the mills of Oregon, Washington and British Columbia. It is the foundation of the extensive bleached and unbleached sulphite pulp industry which has been developed there in the past fifteen years. A large proportion goes into rayon and cellophane, which require the very highest grade of pulp, and may be important fields after the war.

In Mr. Heintzleman's article, he states:

"Estimating the commercial stand of virgin timber in southeastern Alaska at 80 billion board feet, and allowing 80 years as the rotation period during which this virgin timber may be entirely removed under sustained-yield forest management, approximately 1,500,000 cords of wood of 600 board feet each can be taken from the forest each year in this period. This output is sufficient to produce more than 1,000,000 tons of newsprint a year. As the new crop of timber in which cutting will begin after 80 years will have at least twice the volume per acre of the virgin stand, a plan of forest management based on a sustained yield of 1,500,000 cords of pulpwood should prove to be very conservative."

Machine logging with donkey engines and wire rope is the only practical means of moving logs from the woods in most of the logging chances of this region because of the rough topography, the large quantity of debris on the ground, and the large size of many of the trees. Tractor logging is practicable in some places. Ground-skidding and high-lead systems are now used, but one of the overhead systems will probably prove most economical for extensive pulpwood operations. The methods of logging required in Alaska are similar to those used in Washington and Oregon, and the necessary machinery and supplies are manufactured in those States.

Concerning waterpower, Mr. Heintzleman said:

"Southeastern Alaska has excellent water-power resources for industrial use and especially for the manufacture of pulp and paper. Over 800,000 horsepower has been covered by reconnaissance and more detailed surveys to date, and further power explorations are almost certain to disclose additional important sites. The largest single power site so far investigated has a year-long capacity of 32,000 horsepower. In many places power from several sites can be economically concentrated at one manufacturing point. For example, 50,000 horsepower can be developed in one power house from two sites adjacent to the head of Speel River Arm of Port Snettisham near Juneau and the development of two other sites in the same locality would increase the concentration at this point to a total of 75,000 horsepower. Three sites adjacent to the head of Bradfield Canal near the town of Wrangell have a combined capacity of 54,000 horsepower. A concentration of 60,000 horsepower can easily be affected at Ketchikan."

At any rate, it is definitely a United States government policy to manage these Alaskan timber resources with the "prime objective" of "development and maintenance of a permanent pulp and paper manufacturing industry commensurate with the available water power and timber resources." In this line, the government has drawn up a pulp-timber allotment plan for private industries and general terms for pulp-timber contracts.

At present, the northernmost pulp or paper mill is the

newsprint plant of Pacific Mills, Ltd., at Ocean Falls, B. C., 296 miles south of Ketchikan. But in these northern wilds is the last great stand of pulping wood forests on this continent.

### B. C. Forests Important

The forests of the great northern area of British Columbia, now being studied by the joint committee representing Canada and the United States, with a view to future economic development, do not compare at present with those of the coast and the more settled sections of the province's interior. But the Canadian officials are optimistic as to their future utility.

The northern portion of the so-called interior plateau is covered by a continuation of the great northern forest which extends across Canada. The type also spreads north and east over the Rocky Mountains to the northeast corner of the province, where it joins the sub-arctic forests of Alberta. Extending southward along the Rocky Mountains it forms a belt, usually from 4,000 to 5,000 feet in elevation, just below the sub-alpine type.

The forest is a mixture of spruce and alpine fir, with the former usually composing about three quarters of the stand. In the north the spruce is *Picea Canadensis* with low volumes per acre. In the south *Canadensis* is replaced by Engelmann spruce, producing volumes up to 25,000 board feet per acre, as in the upper Fraser Valley. The type has been modified by fire to some extent and in many cases converted into pure

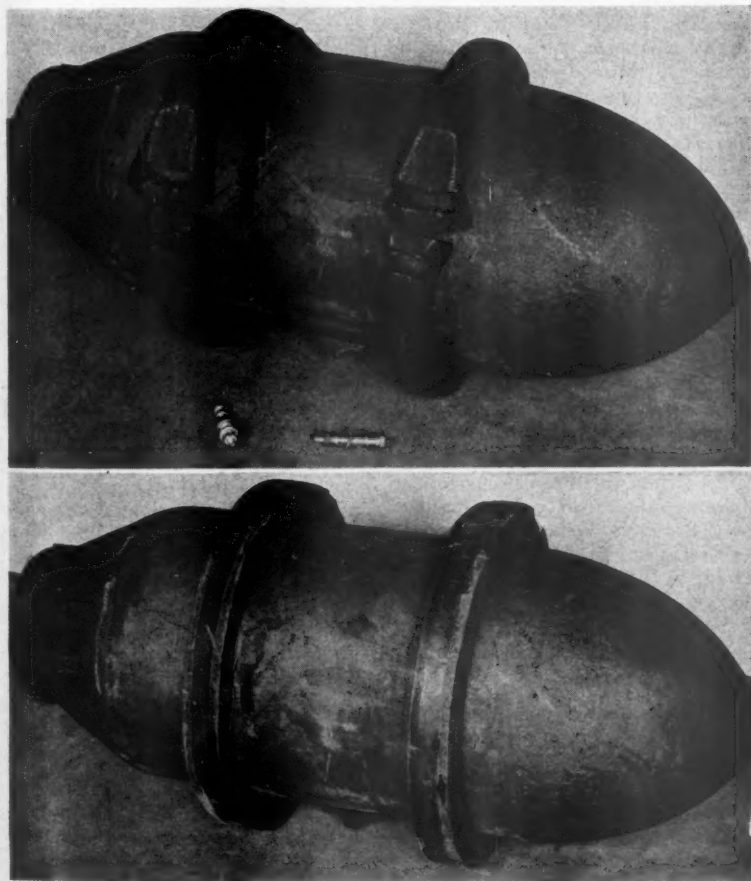
lodgepole pine. This northern forest will be of importance for the manufacture of pulp and paper, but so far has only been cut for lumber and railroad ties along the line of the Canadian National Railway.

Several years ago two or three separate groups planned to establish pulp and paper mills at Prince George to utilize the northern pulpwood, and until comparatively recently negotiations were in progress for a pulp mill at Prince Rupert, but war conditions have held these projects in abeyance.

The more organized section of the northern forest, included in the Fort George district, is being logged in both winter and summer, chiefly with horses, although tractors have been introduced fairly extensively in recent years. Sixty per cent of the cut has been going to sawmills, most of which are on the Canadian National Railway. Latest available figures indicated 60 mills operating, most of them small, only 15 having a daily capacity over 20,000 feet board measure, and two over 50,000 feet board measure. Long rail haul and high freight charges are their chief handicaps.

In his comprehensive survey of British Columbia forests published several years ago F. D. Mulholland of the Forest Service stated: "It is unlikely that any great increase in utilization will occur until economic conditions affecting the world pulp markets are such that it will be possible to construct a pulp mill to utilize some of the spruce, or until greatly increased demand develops on the prairies. Waterpower is available and it is confidently expected that this development will ultimately take place."

## Paperboard Bomb Rings Prove Superior to Steel



A SUBSTITUTE PROVES BETTER THAN ORIGINAL. Top photo shows how old style steel rings around a 1,000-lb. bomb were demolished after being dropped twice on concrete from a four-foot height. Below are paperboard rings around a 1,000-lb. bomb, still intact and useful after being dropped six times in the same test.

● The paperboard industry's role in this war in producing products of great importance to the armed forces is perhaps nowhere more dramatically exemplified than in a new enterprise at Alton, Illinois—the manufacture of bomb rings from news grade paperboard made of waste paper.

These bomb shipping bands not only save millions of pounds of steel each month but have proved to have distinct advantages over steel.

The Alton Boxboard Company began making them in February as the result of a conversation between G. G. Otto, general manager, and a friend of his who happened to be an official in the army ordnance department. Now the rings are mandatory for all bombs for the army up to 1,000 pounds in weight.

Huge sections of the 60-acre plant, originally intended for storage, have been converted to bomb ring factories. The output is being boosted to 15,000 a day.

Tests proved that the paper bands protected bombs against greater shocks than did the old-type steel bands. Besides this, the paper bands may be removed with the hands alone, while the steel ones required tools. (Shipping bands are removed from bombs just before the steel "eggs" are loaded into the planes.)

Another advantage of vital importance is that the paper bands act as wheels for transportation of the bombs. A band is attached to each end of the bomb, which then may be rolled, thus removing necessity for vehicular transportation. Tests made before acceptance by the War Department showed the bands held up when rolled over pavements, when dragged over rough ground and through mud, and could be dropped without damage. Tests proved the Box Board bands water-proof and able to withstand heat up to 600 degrees.

The rings stay on the bombs until they are loaded in plane racks. Exported steel rings were a total loss because they could not be shipped back to this country.



## New Whole Log Barker and Chipper Is Installed at Weyerhaeuser Mill

Entire new wood preparation plant built at Everett effects important savings, helping the war effort. . . . Yield of pulp is increased 18 to 20 per cent. . . . Biggest chipper in world constructed with scrap from Tacoma Narrows bridge.

*(The Pacific Pulp & Paper Industry presents on this and following pages the first published report on a new installation which is potentially one of the most important in the industry in recent years. By word of mouth it already has become a prime topic of discussion among West Coast operators.—Ed.)*

FOR many years producers of pulp and paper have realized that wood could be saved and the cost of their products reduced if means were developed to eliminate the wood waste inherent in removing the bark from pulpwood and logs. The interest with which the industry has viewed this problem is shown by the large number of patents which have been issued during the last forty years with the object of removing bark from wood with a minimum of wood loss.

Where trees of small dimensions are used it has been satisfactory to employ drum barkers. Several types of drum barkers are in current use but the application of such equipment has been limited to the barking of small pieces. As such, the use of drum barkers has not become widely established on the Pacific Coast where at the present time logs of relatively large size are used in the manufacture of pulp. One of the most ambitious attempts to use other than the knife type of barker took place in the 1920's when a Pacific Coast pulp mill installed a pocket type barker for use on whole logs up to about 18 inches in diameter. This machine was not ulti-

mately successful due to the heavy maintenance which was occasioned by the large unit weights of the logs handled.

The Weyerhaeuser Timber Company has for several years been well aware of the large volume of waste incurred in producing pulp. Realizing the acreage needed to grow the amount of timber required by its pulp mills, considerable study has been given over a period of years to developing means for the elimination of waste in the preparation of wood for pulp.

The Pulp Division of the Weyerhaeuser Timber Company has recently completed an installation at its Everett, Wash., mill, which goes a long way towards eliminating the waste heretofore inherent in the production of chips from logs. It includes a new whole log barker and the largest chipper in existence. The equipment, which has been put into operation, represents many years study of the problem and the co-ordinated efforts of many in the Weyerhaeuser organization.

The technical staff was in the midst of developing a new system of chemical cleaning of pulp for the Everett mill prior to 1941, when it was decided to install the barking and chipping unit at that mill.

Operation of the new chemical plant was described in the August, 1941, issue of Pacific Pulp and Paper Industry. In this article, it was stated:

"Greater care in wood cleaning has to be exercised in the production of unbleached sulphite pulp

than in bleached sulphite. In making unbleached sulphite the bark and knot dirt must be taken out in the wood preparation department or the pulp is dirty.

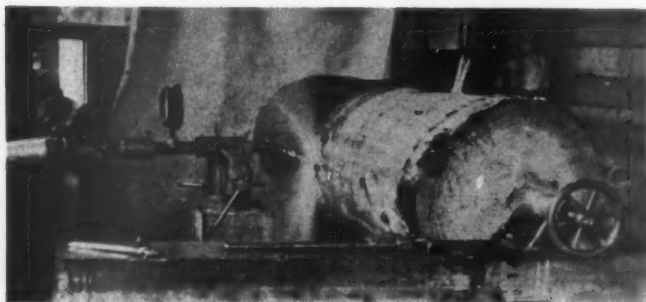
"The preparation of wood for unbleached sulphite has been difficult for the knots had to be bored or sawn out along with the bark seams and other defects within the log. This has required breaking the log down into small cants to make visible these dirt producers. Much handling, equipment and power has been required.

"With all this work eliminated by hydraulic barking and the log chipper, there still remained the problem of the hidden small black knots and bark seams common in Western hemlock. Since it was known that bleaching removed this type of dirt, experiments were decided upon to determine what treatment would suffice to remove it.

"Out of these experiments came chemical cleaning, a chlorine treatment system that removes most of the black knot and bark seam dirt which passes through the flat screens. This is the third step in the Weyerhaeuser program (first, hydraulic barking; second, the giant chipper), but it was essential that it be put in operation before the log barking and chipping."

### Savings

● The new barking and chipping unit has been in operation long enough to demonstrate conclusively that it will effect savings of considerable importance to the war effort. Mr. R. B. Wolf, manager of the Pulp Division of the Weyer-



AN EXPERIMENTAL LOG BARKER set up by Weyerhaeuser engineers at the Longview, Wash., mill where early hydraulic barking experiments were held. This picture, taken in March, 1936, shows 30-inch log which had to be manually turned against water jet. Operators had to wear Sou'westers and slickers and would become covered head to foot with wet bark bits.

haeuser Timber Company, states the results justify the company's expectations as to savings. These potential savings were such that government agencies cooperated in every way possible in the granting of the necessary priorities to complete the project.

The yield of pulp from logs has been increased 18 to 20 per cent. There is not only less loss of wood in the barking operations, but by elimination of the need of reducing logs to cants, there is less loss in saw kerf.

Outside purchase of wood fuel has more than doubled because of the limited amount of waste available, but this increase does not detract appreciably from the calculated amount of savings. Increased costs in fuel are only a little more than ten per cent of the total savings effected in both wood and labor.

As a result of the new installa-

tion, the Everett pulp mill made about 75 men available for use in other vital war industries at a time when public officials have said the most serious wartime problems on the Pacific Coast is the shortage of manpower.

Furthermore, the increased yield of pulp from logs has made it possible to divert many loggers to supplying timber for other urgently needed wood products.

Under the new set-up, installed electric horsepower is practically the same as before. Steam usage is reduced to approximately 25 per cent of the original steam demand.

Water usage is about the same as before, because the double-nozzle in the barker requires no more water than did the original log and cant showers.

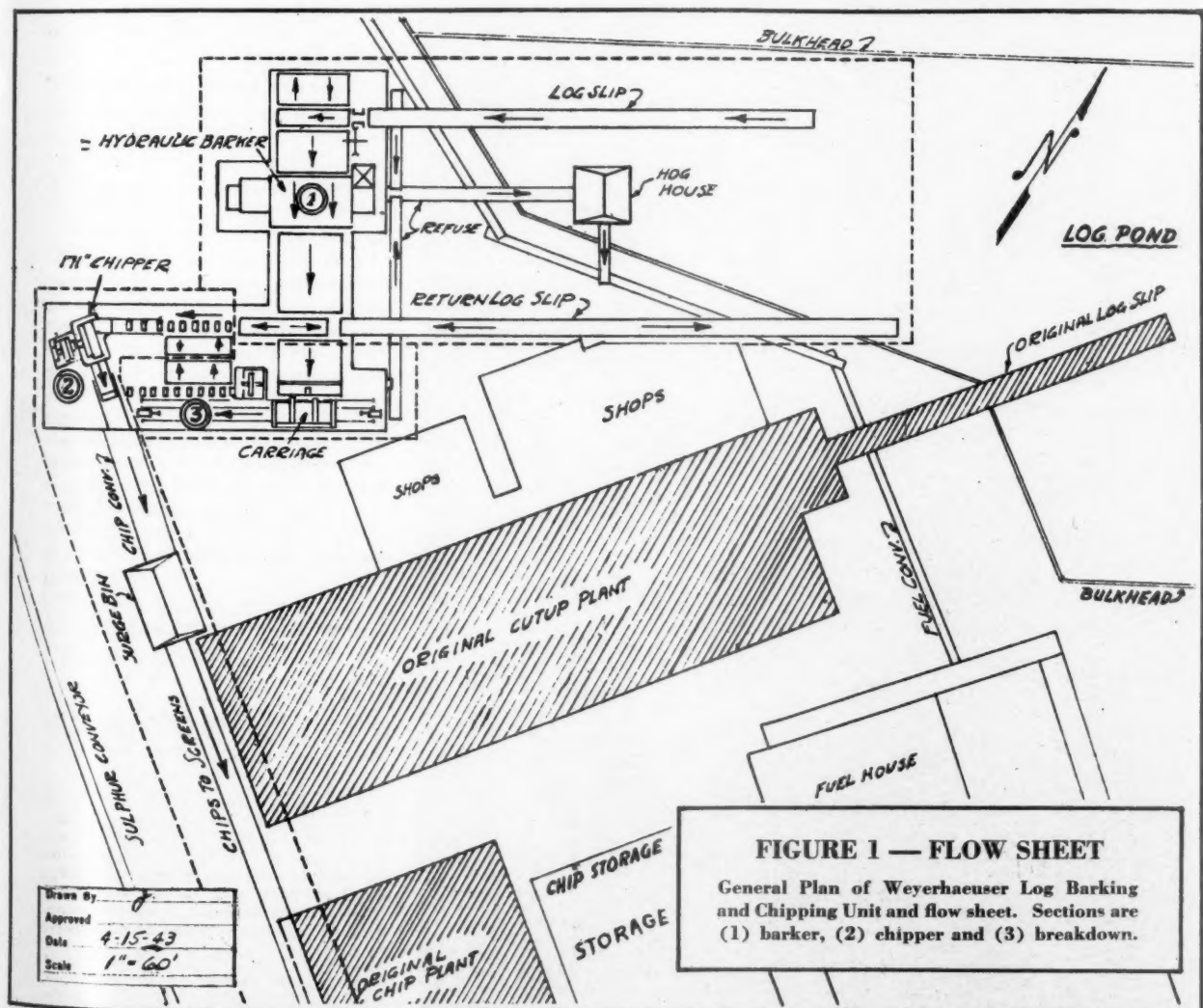
#### Equipment

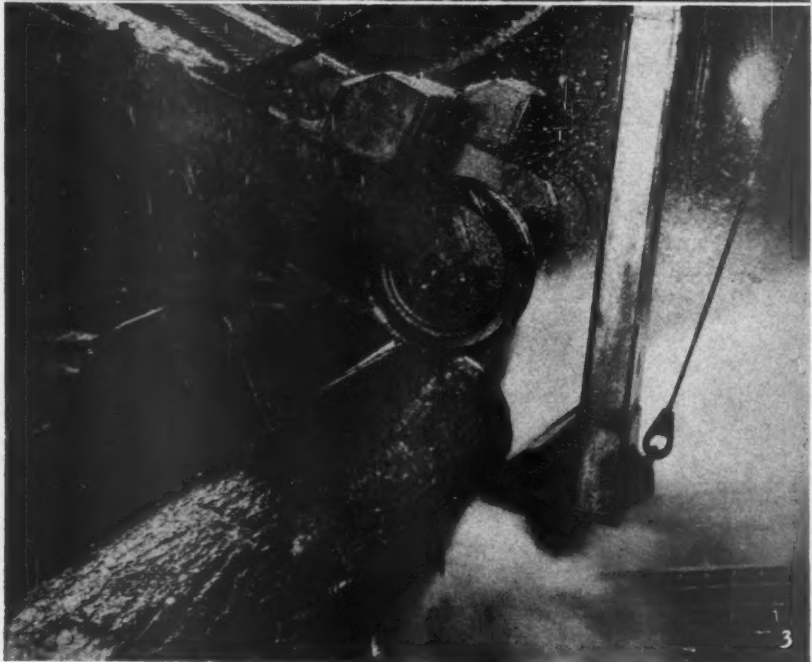
● Essentially, the new barking and chipping equipment consists of a machine in which the bark is re-

moved from the log through the medium of two overlapping jets of water, a chipper large enough to chip logs up to 40 inches in diameter, and a band mill for trimming those few logs over 40 inches in diameter to a size which the chipper spout will accommodate.

The barking apparatus consists of equipment in which the logs are held while the bark is being removed by the high pressure water jet. A log haul of conventional design is used to bring the logs from the pond. At the head of the log haul, the logs are cut into approximately 20-foot lengths by a swinging cut-off saw and are then conveyed to the barker proper. The barker is capable of handling logs 9 inches to 72 inches in diameter and 12 feet to 26 feet in length.

The logs are held on steel knees not unlike sawmill carriage knees set





at an angle of 20° from the horizontal. These knees serve to hold the logs in place during the barking operation and can be set at predetermined positions depending upon the diameter of the log to be barked.

Over the knees are mounted structural steel arms which perform the important function of holding the log against the water jet and which, by means of an indexing chain, rotate the logs in even increments in order to continuously present a fresh bark surface for removal.

Actual barking is performed through two traveling nozzles with sprays overlapping, which are mounted on a carriage run on tracks underneath and parallel to the log. The width of the nozzles' cut is about seven inches and the pressure of water is 1400 pounds per square inch. The carriage for the nozzles is set under the log in order that the two nozzles will be parallel to the bark surface under all conditions of log taper.

The speed with which the nozzles' carriage moves back and forth can be governed within rather wide ranges. It may be changed to accommodate tight clinging bark or bark of different thicknesses. The operator is also able to vary the amount of rotation imparted to the log by the indexing mechanism. The whole apparatus is enclosed in a housing with water-tight doors which permit the entrance and discharge of the log before and after the barking operation. The bark removed drops to a conveyor from which it passes over a screen on which surplus water is removed before the bark is hogged. Operation of the barker is controlled from a station adjacent to the barking machine. Here the operator can view the barking oper-

#### THE STORY IN PICTURES

1. The new plant. On right, log haul from pond, which starts below the small building housing steam-driven winch. Center small building is hog-house. Log haul back to pond (for barked logs to be held in reserve) is at left.

2. Log arrives from pond. It is seen just to left of the swing cutoff saw. Secondary log haul in foreground delivers logs to storage deck ahead of the barker or to cleaning deck. Entry door of barker is in extreme right center. Glass-enclosed barker control room is between saw and barker door.

3. Barker in action. Photo taken through glass window of control room. Arms and index chain hold log against the knees of the barker (on the left).



ation through a five-ply plate glass window, and here the levers and buttons are placed which control the various pieces of equipment.

Chain conveyors are used to transport all logs less than 40 inches in diameter to the roll case directly preceding the chipper. Those logs more than 40 inches in diameter are by-passed through a band mill in which they are reduced in size sufficiently to enter the chipper spout.

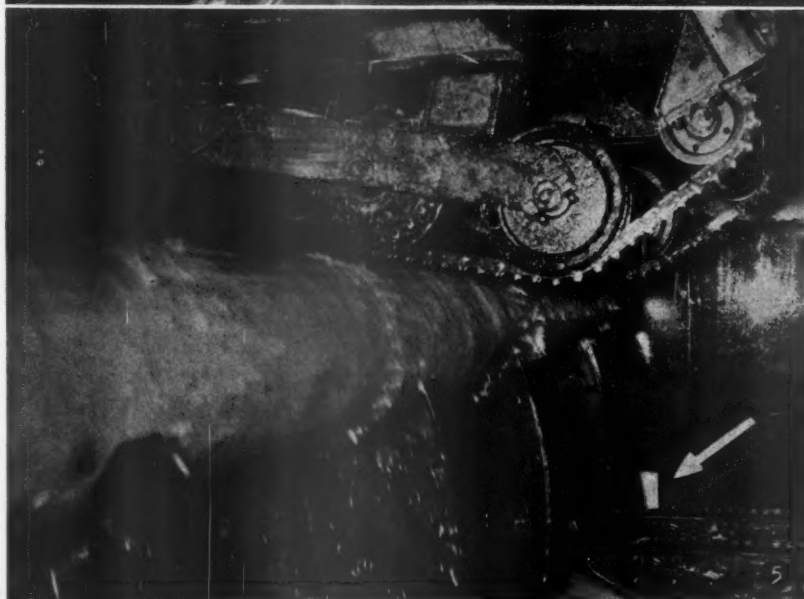
The chipper is of standard design, having a disc 171 inches in diameter and  $9\frac{3}{4}$  inches thick. Including a 1,000 horsepower wound rotor motor, the revolving parts of the chipper weigh in excess of 45 tons. An ingenious loading device is used to place the logs in position for chipping. Four knives are used on the chipper which is powered with a specially designed wound rotor motor.

Due to the impossibility of obtaining armor plate, it was necessary to manufacture the chipper disc from steel salvaged from the Tacoma Narrows bridge over Puget Sound which collapsed in a windstorm in 1941.

### History

● The experimental work with the hydraulic jet showed that the action of the water during the barking operation was more one of erosion than of chiseling. Due to the fact that the difficult portion of the bark to remove was the cambium layer next to the log, it was found that a jet which would operate at ninety degrees to the log was essential. It was also found that even though it was possible to remove bark at pressure starting at about 400 pounds that the rate of removal increased with the rise in pressure. Also the higher the pressure the farther away from the log the nozzle could be mounted.

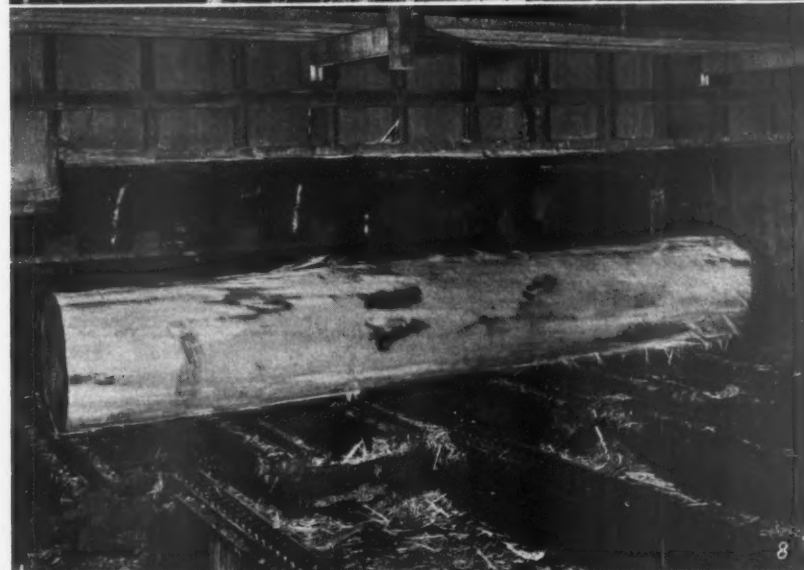
The fact that the action of removing the bark was one of erosion rather than "chiseling" allowed de-



4. Log has been barked. It is still held down on barker knees.

5. It is being unloaded from the barker. Indexing arms above the log. Arrow points to water jet, moved into an end zone. Most of stream is obscured by end zone housing.

6. Control room. Operator holds master switch that loads and unloads barker. He faces bench board of program control. Two hand levers at his right are for predetermined setting of knees. Note flying bark and water through heavy plate glass window. Inset shows reading of 1430 pounds per square inch hydraulic pressure.



sign to proceed along two methods: (1) Turning the logs so that the jet would travel circumferentially around the log and (2) having the jet travel the length of the log. A number of models were made along with drawings, of each of these methods. The method adopted, which was one of several ways of having the jet travel the length of the log, is shown in Figure 2 on page 33.

At the outset of the experimental work it was understood that, although work was necessary to determine the most advantageous pressures and means of distribution, the main problem lay in the handling of the logs. This proved to be the case as the work progressed. It was found desirable from the studies made on logs that it would be necessary, in order to get a maximum of wood and manpower savings, to have equipment capable of handling all types of logs—everything from shattered quarters and slabs to "schoolmarms" without too much loss of time. The problem would have been quite simple if all the logs were straight and round. However, nature does not seem to grow all trees in this manner. If this had been the case, different types of equipment than that shown in Figure 2 would have been used. After a great deal of experimental work it was found that this arrangement covered the widest range of log variation in the best manner.

Experimental work which culminated in the design of the equipment just installed was started in 1935 under the supervision of D. K. MacBain, plant engineer of the Longview, Wash., mill of the Pulp Division. Construction of the project was started at Everett in June, 1941, and was also under Mr. MacBain's supervision. Others in the organization contributed to the final design as did O. C. Schoenwerk, consulting engineer of Chicago, Ill.

7. Bark being conveyed to hoghouse. Wood loss is reduced 18 to 20 per cent by new installations. Photograph shows type and quantity of waste from barker.

8. Barked log unloaded from barker, rests on exit deck chains.

9. At extreme left is exit door of barker with barked logs on storage deck. Opening to return log haul to pond (for storage) on extreme right. Storage deck ahead of chipper is in foreground.

## Program Control for New Log Barker

By ROSCOE H. SMITH

Manager of Applied Engineering  
Reliance Electric & Engineering  
Company,

and R. L. PUETTE

Application Engineer,  
Clark Controller Company.

● Stripping the bark cleanly and completely from hemlock, spruce and pine logs, using high pressure streams of water, has been made economically feasible as well as physically possible in the co-ordination of steam and electrically powered barking equipment installed by the Pulp Division of the Weyerhaeuser Timber Company at its Everett, Washington, mill.

Working in close cooperation with the Weyerhaeuser Company engineer, particular attention has been given to the development of a system of motor drives and automatic controls through which to expedite the sequence of operations required in initiating and carrying to completion the barking of a log.

In this new system of hydraulic barking, the logs come up from the water level to the upper story of the plant by the usual methods of log haul. Cut into lengths of 20 feet or less, and stripped of limb projections and bumps, all logs arrive on a storage deck where they are run up against a log stop and loader.

All operations from the storage platform on the entry side of the barker to the exit platform are under the control of a single operator in a glass-enclosed, sound-proof cabin, immediately overlooking the log as positioned for debarking in an enclosed chamber to which entrance and exit is provided by means of vertically operated sliding doors.

To put a log into the barker, the operator presses a button in the top of the master control handle. This initiates a sequence of operations as follows:

(1) Motor-operated entry and exit doors are raised.

(2) Motor-operated indexing chain arms are raised.

(3) Motor-operated entry and exit deck chains begin moving.

(4) Operator pushes a foot-switch to throw a log from the loader onto the entry deck chains.

(5) Operator pre-selects one of four pairs of supporting "knees" to receive and position log for debarking. Choice

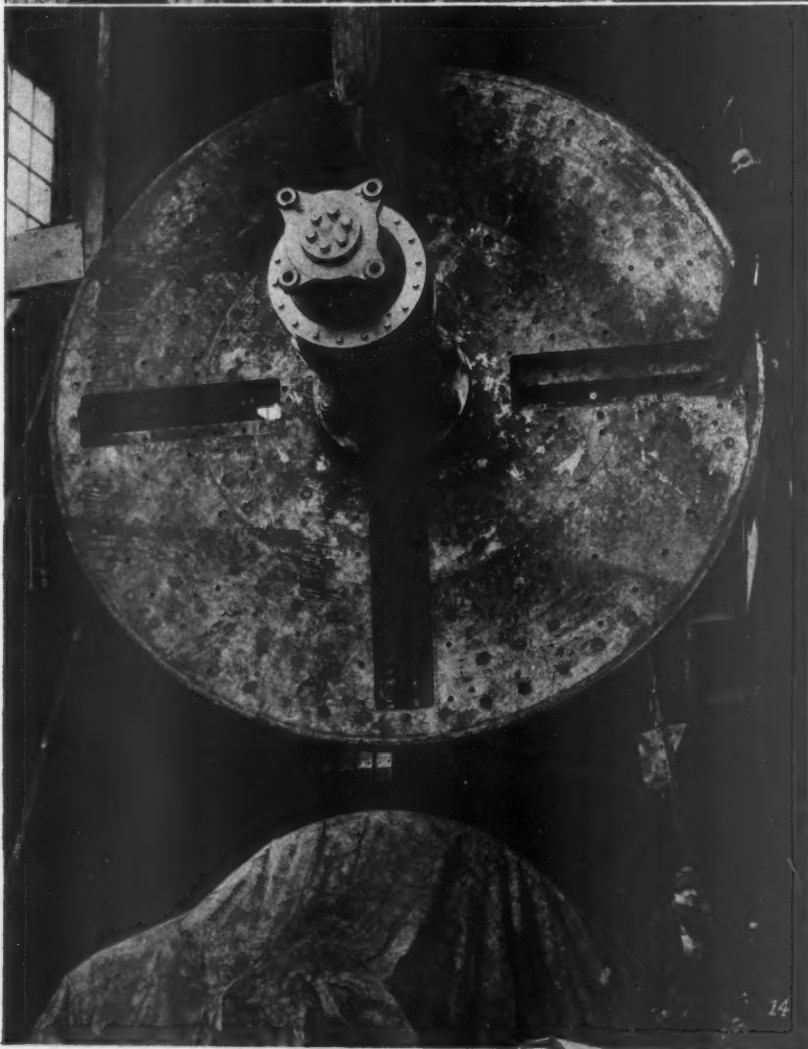
10. Breakdown section. Unusually large logs—over 40 inches—are reduced sufficiently to enter chipper mouth. This carriage is unusual in that it is controlled by the sawyer at right, requiring no dogger or setter. Equipped with two special air dogs.

11. A big log is being fed into chipper over concave rolls. Chipper feeder stands at his station.

12. A log is descending into chipper mouth and is being chipped.







is dictated by length of log, its diameter and its shape.

(6) Motor-operated deck chains deposit log on "knees" selected by operator and visually registered on control board.

(7) Operator lifts his finger from button on master control handle, indexing chains drop down and toothed chain wraps around outside of log to hold it firmly into position.

(8) The lift skid which has supported log is lowered, leaving bottom area of log exposed to raking action of high pressure stream of water.

(9) Operator pre-selects length of travel for water nozzle and sets amount of rotation or indexing (from 4 to 7 inches) to be given log between each trip of the nozzle.

(10) Operator pushes button marked "carriage start" to commence operating cycle.

(11) Controlled by 36-circuit rotating cam limit switches, the steam engine makes a given number of revolutions, first in one direction and then in the other, which are translated mechanically into straight line forward and reverse motion of a carriage on which is mounted the twin-jet hydraulic nozzle. This nozzle travels approximately 18 feet per second, reversing direction in 3/10 of a second. Controls are provided so that the operator can reverse the nozzle at one foot intervals on each side of a 12-foot space at the center of the barker, if this is desired.

(12) When a normal stop is used, the steam engine will pull the nozzle into one or the other "end zone" so that the stream of water can flow uninterrupted during a change of logs. At completion of barking, the operator again presses the button in the master control handle and the sequence of operations starts all over again. The lift skids are brought up under the log, the indexing chains are raised, the "knees" retract a small amount, and entry and exit doors are raised.

(13) The operator moves the master handle to a forward position, causing an unloader to come up beneath the log and discharge it from the barker.

(14) While the unloader is completing its operation, the operator sets the "knees" to accommodate the next log.

(15) When the unloader reaches its down position, the operator depresses the foot switch that works the loader, thereby starting a new log into the barker unit.

(16) When the log has been placed on the "knees" the operator releases the push button in the handle of the master control and the rest of the operating sequence starts—the entry and exist doors close, the indexing chain arm drop down, wrap around the log, etc.

All motions which are part of the automatic program control are also provided with manual control to give the operator a means of handling any unusual conditions which may be encountered.

13. Chips being carried on five-foot belt from the chipper to the surge bin.

14. This picture was taken when the 171-inch chipper disc and its arbor were being lowered into place. The disc is made of one-half inch plates—19 of them—from the wrecked Tacoma Narrows bridge, welded together through holes.

The entire barking operation of a single log as outlined above takes place in approximately three-fourths of a minute. Both electric motors and electrical controls must not only be able to withstand this punishing service but must be capable of maintaining the highly accurate performance necessary to produce a cleanly barked log.

The automatic program control was considered desirable because it provided the only means of securing the necessary speed of operation. Although the engineering details were complicated, once the operation was set up in the fashion described, the operator's work was reduced to a minimum. In fact, it would

have been difficult to get any degree of efficiency out of the operation of the equipment without this type of control. With the possible exception of some paper machine drives, it is the most elaborate program control which has yet been set up in any West Coast woods industry plant.

### Motor and Controls for the Big Chipper

● Instead of a synchronous motor, which is usually employed for this service, the chipper is driven with a General Electric 1,000 horsepower 240-r.p.m. wound rotor steel mill type of induction motor.

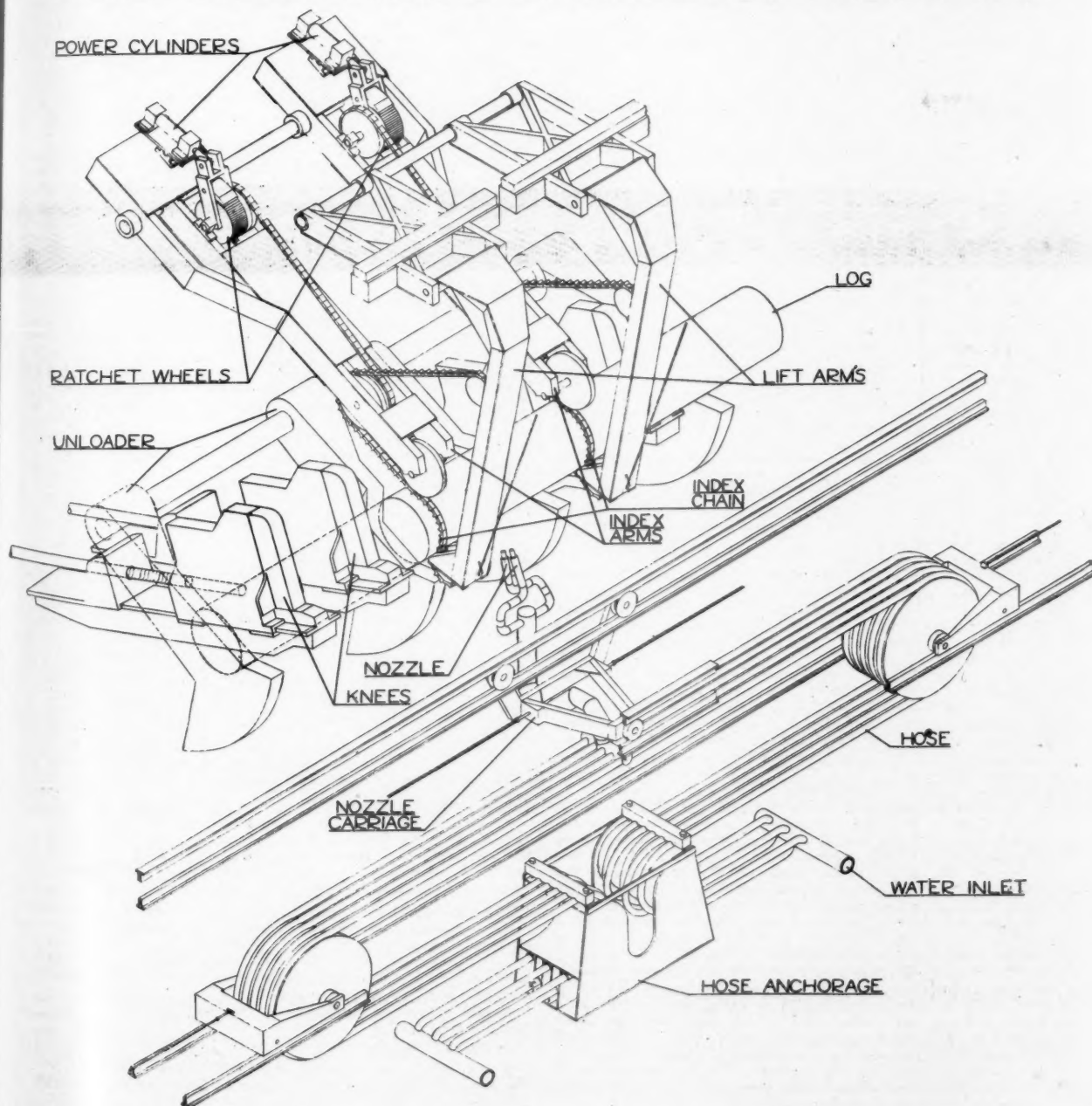
This type of motor was selected so as to use the flywheel effect of the disc to keep down the power peaks, according to

General Electric officials. (Revolving parts, including motor, weigh about 45 tons.)

Resistance is left in the rotor circuit to give a six per cent slip at full load and when the power peak exceeds a predetermined value, additional resistance (twelve per cent slip) is put into the rotor circuit to slow down the chipper to release additional flywheel energy.

This slowing of the chipper speed does not result in any particular reduction in the quantity of chips because the heavy

FIGURE 2—ISOMETRIC DRAWING OF NEW WEYERHAEUSER BARKING MACHINERY



loads occur only when large logs are being cut up and these present a large end surface for cutting.

When a heavy electrical load persists while the larger valve of resistance is being used, a relay closes to stop the log feed until the motor can bring the chipper up to full speed again.

Nearly an hour would be required to bring the heavy disc and motor rotor to a standstill unless some braking were used. The motor controller has been designed so that when the operator pushes the "stop" button, the motor is "plugged" (power put onto the motor in the reverse direction) with a new and higher valve of resistance in the rotor circuit. Just before the motor comes to a stop the contactors open and prevent reversing the direction of rotation.

When starting the motor the operator pushes the "start" button and the controller automatically takes the motor through the successive stages of starting resistance. Approximately 68 seconds is required for starting (or stopping) and the current is limited to 130 per cent of full load.

## Description of Equipment In New Weyerhaeuser Plant

● The general contract for the construction and installation of the barker and chipper unit was awarded to H. J. Solie of Everett. Purchases were made by R. M. Inkster, Purchasing Agent of Pulp Division Weyerhaeuser Timber Company of Everett.

A large portion of the equipment was furnished by Sumner Iron Works of Everett, who also furnished a large number of the unit assemblies.

The main distribution power cubicle control switchboard for control of feeder circuits serving the 2200-volt and 550-volt motors was furnished by Westinghouse Electric & Manufacturing Company.

### Hydraulic Barker Section

The first of the three parts of the barking and chipping unit to be completed was the hydraulic barker. It was built to handle logs from nine inches to six feet in diameter and from 12 feet to 26 feet long. The size of the barker was determined by the unusually large size of Western hemlock and white fir.

The barker is composed of several sections. A brief description of each follows:

#### (1) Log Loader

This is a regular five-arm log loader powered by a 14-inch diameter by 20-inch stroke steam cylinder operated with a solenoid valve and controlled by the barker operator.

#### (2) Lift Skids

This consists of four cast steel lift skids equipped with SS 40 steel chains traveling at a speed of 100 feet per minute. These skids are lifted by a set of cams driven by a 5-hp., 85-rpm., 550-volt, three-phase, A-C splashproof Reliance gear motor, which operate at the change of logs, and lower during the barking cycle.

#### (3) Entry and Exit Doors

These doors are eight feet high and twenty-eight feet nine inches long, made of twelve-gauge fabricated steel channel, covered with 18-gauge galvanized sheet iron. Each is counter weighted and operated by a 5-hp., 85 rpm., 550-volt 3-phase A-C Reliance gear motor.

#### (4) Log Unloader

This unloader has four fabricated steel arms six inches wide with a seven-foot radius. It serves to unload the logs by raising them over the knees as indicated in Figure 2. This loader was manufactured by the Isaacson Iron Works in Seattle. It is powered by a seven-inch diameter 48-inch stroke hydraulic cylinder operated by a three-inch four-way air operated valve.

#### (5) Knees

The barker is equipped with four log knees set at an angle of 20 degrees from the horizontal. These knees receive the logs from the loader and serve to hold them in place during the barking operation. Nested coil springs are used in order to reduce the stock on the structure. For positioning, the knees are powered by a 20-hp., 3-phase, A-C fully water-tight Reliance gear motor equipped with a 10-inch A-C Clark magnetic brake. For retracting, each knee is operated by a 10-hp., 3-phase A-C Reliance gear motor equipped with a 10-inch A-C Clark magnetic brake.

The control of these knees was one of the most difficult problems encountered due to the fact that it was desired to have them automatically come up to a predetermined position after one log was barked and as the next one was being loaded in. They also must travel automatically in a backward direction just before the log is unloaded in order to insure that the loader properly catches the logs. The predetermining of the knee setting for the next log is necessary in order to increase the speed of changing logs.

## PACIFIC PULP & PAPER INDUSTRY

### (6) Lift Arms

These structural steel lift arms perform one of the most important functions—that is, holding the log down against the water jet and also indexing the logs in even increments in unison with the nozzle travel. These arms are raised together by a cable lift driven by a 20-hp. Reliance gear motor equipped with a 10-inch D.C. Clark magnet brake.

### (7) Indexing Equipment

This equipment is composed of several parts, all of which were manufactured by the Oil Gear Company of Milwaukee, Wis. Indexing is accomplished by the use of the following equipment: (a) A 67 gallons per minute type C.G. 6017 Oil Gear radial piston pump suitable for operating pressures up to 1700 pounds and driven by a 75-h.p. 900 r.p.m. Westinghouse motor, (b) a 5 3/4" x 4" stroke power cylinder, (c) a 7 1/2" x 4" stroke adjustable measuring cylinder, (d) two high pressure accumulators filled with nitrogen gas, (e) two 3" diameter, 12" stroke power cylinders to operate a ratchet mechanism for motivating the index chains, (f) all necessary solenoid operated valves for controlling the cycle. All of these various parts are controlled automatically through a program control. The operating pressure used on the power side of the indexing system averages about 900 pounds per square inch. The length of index stroke is selected by a "stop" mechanism on the oil gear system driven by a 2-hp., 550-volt Reliance motor.

### (8) Nozzle Carriage Equipment

All the carriage and other equipment pertaining to this section was manufactured by the Vaughan Motor Company of Portland, Ore. This consists of a nozzle carriage as illustrated in Figure 2, air bumpers on each end in case of over travel of the carriage, 2-hose reel carriages and the anchorage for the hoses, cable sheaves and tension devices for driving the carriage and holding the tension on the cable on the hose carriages. The hose reel and nozzle carriage is linked together by four U. S. Rubber Company style T5-32 rubber hoses. These hoses operate under 1440 pounds water pressure and serve to convey the water from the stationary hose anchorages to the moving nozzle as the carriage travels back and forth under the log.

### (9) Nozzle Carriage Engine

The carriage is driven by a steam engine manufactured by the Sumner Iron Works and machined and assembled by the Stetson-Ross Machine Company in Seattle. It is a 15 by 13 twin steam engine mounted on a structural steel base, with a 30" Clark Controller Company electric drum brake mounted in the center of the crank shaft next to the cable drum. The engine is controlled with Ross solenoid valves which operate the air cylinders controlling the steam valves.

### (10) High Pressure Pump and Motor

Water for barking is supplied by a Byron Jackson type DHVO 6 x 12 1/2 horizontal double case 7 stage centrifugal pump operating at 3550 r.p.m. and powered by a 1000-h.p. 3600-r.p.m., 220-volt Westinghouse squirrel cage induction motor. A motor-operated gate valve manufactured by Vaughan Motor Company serves to close the discharge on starting.

### (11) Structure

The structure housing and supporting the barker is of structural steel fabricated by the Isaacson Iron Works.

### (12) Waste Handling Equipment

The bark and water fall down on a perforated conveyor equipped with two 16" chains which convey the bark to a No. 65 hog manufactured by the Diamond Iron Works of Milwaukee, Wis., powered by a 75-h.p. Westinghouse synchronous motor. The water drains to a vertical sewage pump by which it is delivered to a Link-Belt Company vibrating screen which removes fine particles of bark from the water.

### (13) Motors

A majority of the special motors used on the barker were furnished by the Reliance Electric Company of Cleveland, O. All are specially designed high starting torque gear motors, which are equipped with outboard bearings to relieve the strain on the gear cases.

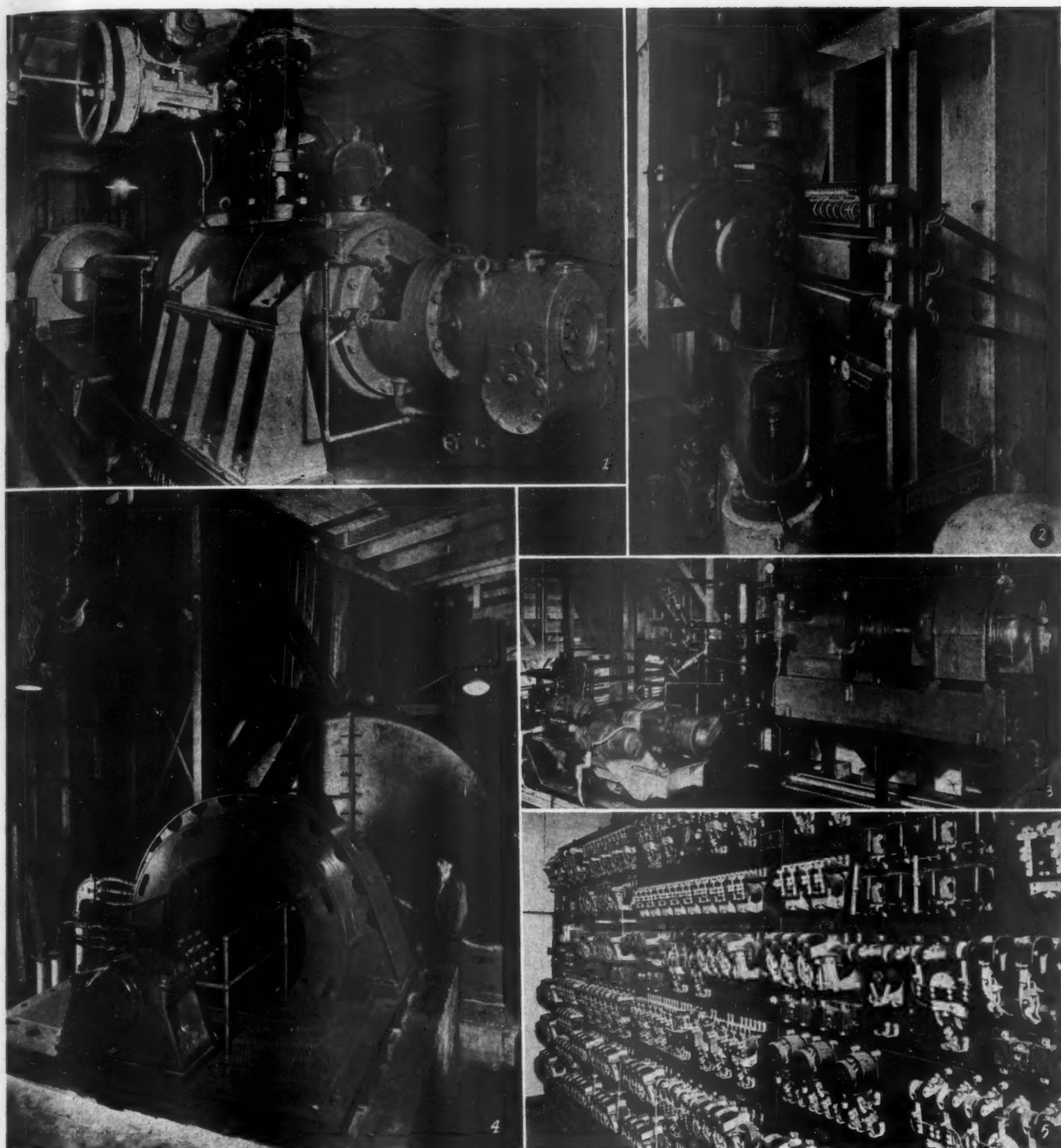
### (14) Program Control

The program control was engineered and manufactured by the Clark Controller Company of Cleveland, O., in cooperation with the Reliance Electric & Engineering Company. All the automatic controls for indexing the logs, reversing the engine, controlling the speed and stroke of the engine, unloading the logs and various other functions are combined in this program control.

### (15) Control Room

The control room is partly protected on two sides by five-ply 1 3/16" thick plate glass. One of these two sides forms part of a side wall of the barker, so the operator has a com-





**EQUIPMENT FOR THE NEW WHOLE LOG BARKING AND CHIPPING UNIT installed at the Everett mill of Weyerhaeuser Timber Company.**

1. Pump machinery installed below the barker. At left rear is a 1,000 HP Westinghouse squirrel cage induction motor for driving the pump. In right foreground is Byron Jackson seven stage pump (3550 RPM) which supplies water for the barker. Above this is a Vaughan Motor Company operating valve.
2. Twin steam engine (15"x13") which drives the nozzles' carriage in the barker. Designed by Sumner Iron Works and manufactured by Stetson-Ross Machine Company. The cam switches at right of the engine are part of the equipment for the program control.
3. Log indexing equipment installed above the barker. Oil Gear Company 67GPM radial piston pump on right. Next on right is adjustable measuring cylinder. Power cylinder on left.
4. General Electric 1,000 horse power wound rotor motor which drives the big chipper, shown at end of the shaft. Revolving parts, including motor, weigh about 45 tons.
5. Panel board for program control of barker made by Clark Controller Company in cooperation with Reliance Electric & Engineering Company.

plete view of the barking operation through glass windows. In this room are contained all the instruments, gauges and equipment necessary for controlling the barking operation.

### Chipper Section

#### (1) The Disc

The disc is made of nineteen steel plates, each  $\frac{1}{2}$ " thick, welded together and machined in two halves. These halves are held together with 156  $1\frac{3}{16}$ " shear pins and a band 1" thick shrunk upon and welded to the periphery.

The disc revolves at a no load speed of 240 R.P.M. resulting in a rim speed of 10,800 feet per minute. It is  $9\frac{3}{4}$ " thick and is faced on the anvil side with one inch thick abrasion resisting steel face plates fastened by  $1\frac{3}{16}$ " bolts through the disc.

#### (2) Knives

The four knife pockets will accommodate knives which are 30" long, one inch thick and 8" wide, and which were made by Simonds Saw and Steel Company.

#### (3) Arbor

The disc is mounted on a 19" nominal diameter forged steel arbor approximately 9' long.

#### (4) Bearings

On each end of the arbor is mounted a pair of 17" inside diameter double cup single cone roller bearings.

#### (5) Couplings

The arbor is coupled to the motor shaft by a flexible type coupling.

#### (6) Motor and Controls

The chipper is driven by a 1000-h.p. wound rotor motor specially designed to insure low starting torque and manufactured by the General Electric Company. The chipper was designed by Sumner Iron Works in collaboration with the Weyerhaeuser engineers.

The disc was fabricated by the Willamette Iron and Steel Corporation of Portland, Ore., and machined by the Portland Iron Works of the same city. The Johnson Manufacturing Company machined base castings and assembled and drilled the disc.

Other equipment pertaining to the log and chip handling of this section is as follows:

#### (1) Concave Rolls to Chipper

These are spiked concave rolls mounted on a steel roll case and driven by individual two h.p. 550 volt 3 phase AC Reliance gear motors. This application of drives on line rolls is the first of its kind to be made in forest industries. It conveys logs at a rate of 90 feet per minute to the chipper.

#### (2) Feed-in Device

The logs are lowered into the chipper by a feed-in device manufactured by Sumner Iron Works and the Isaacson Iron Works.

#### (3) Chain Conveyor

Chips are conveyed from the chipper with a chain conveyor furnished by the Link-Belt Company of Seattle consisting of eight strands of C-132-C Promal riveted chains. This conveyor is powered by a 30-h.p. 1800-r.p.m. Westinghouse motor which drives through a Western Gear Works D-58 reduction gear.

#### (4) Chip Belt

This belt is a 60" five-ply 28-ounce Hewitt Rubber Corporation belt furnished by the James Brinkley Company of Seattle and is driven by a 40-h.p. 1800-r.p.m. Westinghouse motor through a Western Gear D-54 reduction gear.

#### (5) Chip Feeders

Chips are delivered to the screen with Link-Belt type feeders. These are driven by a  $7\frac{1}{2}$ -h.p. 1200-r.p.m. Westinghouse motor through a Western Gear DC-58 reduction gear.

#### (6) Belt to Screen

This is a 42-inch four ply rubber covered Hewitt belt 264 feet, center to center, traveling at a rate of 503 feet per minute, furnished by James Brinkley Company. It is driven by a 30-h.p. 1200-r.p.m. Westinghouse motor through a Western Gear D-54 reduction gear.

#### (7) Chip Screens

The chip screens are of the shaker type supplied by Sumner Iron Works.

## PACIFIC PULP & PAPER INDUSTRY

### Breakdown Section

Logs over 40" in diameter are reduced in size sufficiently to enter the chipper spout. Such logs are sawed on a carriage fabricated by the Isaacson Iron Works and equipped with two special Sumner Iron Works air dogs.

The carriage is unusual in that it is controlled entirely by the sawyer, having no setter or dogger on the carriage. All necessary operations are controlled by foot buttons and thumb buttons at the sawyer's control station. The carriage has two 78-inch blocks. Another unusual feature of the carriage is that it is equipped with springs for absorbing the shock of loading logs instead of the usual type of wood bumpers. The springs are mounted on the carriage axles.

Effecting important savings in wartime critical materials, a band mill and other salvaged equipment from old Mill A was salvaged and put into use in the breakdown section.

Also used is a cant loader manufactured by Sumner Iron Works driven by a 20-h.p. Westinghouse motor through a D-36 Western Gear reduction gear. Cant transfer decks of the usual sawmill type are installed. The carriage is driven by a 13 x 16 direct acting twin steam engine.

### Log Handling Equipment

#### (1) Main Log Haul from Pond.

This log haul brings the logs from the pond into the mill and is similar to the regular sawmill log haul. It is equipped with a  $1\frac{1}{4}$ " x  $2\frac{3}{4}$ " x 8" dredge quality cable chain, driven by a 75-h.p. 900-r.p.m. Westinghouse motor through an OD 60 H Western Gear reducer.

#### (2) Log Dogging Jaws

This consists of a set of four jaws powered by a 10" diameter 32" stroke steam cylinder operating at 125 lbs. pressure.

#### (3) Log Cut-off Saw

This is a 108" cut-off saw. The saw structure is made of structural steel. The saw is equipped with SKF bearings and is driven by quadruple pitch chain. It is powered by a 100-h.p. 900-r.p.m. Westinghouse induction motor. The saw is operated by 4" x 30" stroke, oil cylinder built for 1000 lbs. working pressure.

#### (4) Drag Saw

The drag saw is an auxiliary to the circular cut-off saw for logs larger than 42" in diameter. This saw is equipped with a 10' long 16" wide 9 gauge blade and is driven at 120 double strokes per minute, each stroke being 30" long. The motor is a 10-h.p. 1200-r.p.m. Westinghouse.

#### (5) Secondary Log Haul

After the logs are brought up into the mill and cut in two, the secondary log haul delivers them to the storage deck ahead of the barker or to the cleaning deck. This secondary log haul is equipped with a  $1\frac{1}{2}$ " x  $2\frac{1}{4}$ " x 8" pitch dredge quality cable chain and is 28' center to center. It is driven by a 25-h.p. 1800-r.p.m. Westinghouse Class 2 motor through a Western Gear reducer type D-56.

#### (6) Log Kicker

In order to remove the logs from the secondary log haul, four  $1\frac{1}{2}$ " x 8" x 7'6" long kicker arms are mounted on a shaft. These kickers are operated by a 14" diameter by 30" stroke steam cylinder controlled by a solenoid valve operated by the cut-off sawyer.

#### (7) Cleaning Deck Transfers

For logs with limbs too long to pass through the barker, a 15' center to center level deck is provided. This deck has four sets of size H No. 82 chain for transferring the log and is driven by 10-h.p. 1800-r.p.m. Class 2 Westinghouse motor through a Western Gear D-56 reduction gear.

#### (8) Transfer After Barker

A 33'10" center to center level deck is provided equipped with four H-124 chains driven by a 20-h.p. 1800-r.p.m. Class 2 Westinghouse motor through a Western Gear D-58 drive.

#### (9) Log Transfer to Carriage

This is an 18' center to center deck used for storage ahead of the breakdown carriage. Other details on this are identical to the cleaning and entry decks.

#### Lumber Treatment

All treatment of lumber, including the treatment of joists and all permanent lumber structures with chromated zinc chloride, was done by West Coast Wood Preserving Company of Seattle.

### Kinney Named Chairman Of Papermakers & Associates

● William A. Kinney, production manager, Pioneer Division, The Flintkote Company, Los Angeles, was elected chairman of the Papermakers and Associates

of Southern California at the annual election meeting in Los Angeles April 15, succeeding Charles G. Frampton, superintendent, Fernstrom Paper Mills, Inc.

W. T. Tillotson, U. S. Gypsum Company, was chosen vice chairman and

John Van Ounsem, The Flintkote Company, secretary-treasurer.

A complete report of the meeting, with photographs of the event, will be published in the next regular issue of PACIFIC PULP AND PAPER INDUSTRY in June.

# Personnel Directory of Pacific Coast Pulp, Paper, Paperboard and Roofing Mills

## BERKHEIMER MANUFACTURING CO., J. E.

2928 South M. Street.  
Tacoma, Wash.

J. E. Berkheimer, Owner, Pres.  
C. F. Humble, Supt.  
H. A. Montgomery, Mgr.  
Branch Office, Kenton Station, Portland, Ore.  
Capacity, 12 tons Rag Roofing, etc.

## BRITISH COLUMBIA PULP & PAPER CO., LTD.

General Offices: Bank of Nova Scotia Bldg., Vancouver, B. C.  
Mills: Port Allee and Woodfibre, B. C.

Officers:  
Lawrence Killam, Pres. & Manag. Dir.  
George Kidd, Vice-Pres.  
Ethel M. Dominy, Secy.  
G. D. Humphrey, Asst. Mgr.  
A. E. Baker, Purch. Agt.  
L. H. Killam, Sales.  
L. K. Bickell, Chief Chemist.  
Leo C. Kelley, Gen. Sulphite Supt.  
V. M. Warren, Traffic Mgr.  
Port Allee Mill:  
Peter McGhee, Plant Comptroller.  
R. H. Richmond, Supt.  
C. C. Ryan, Chief Eng.  
C. Davidson, Master Mech.  
John G. Morrison, Chem.  
O. E. Shaw, Steam Eng.  
Walter Warner, Log. Supt.  
Capacity, Pulp: 180 tons Bleached Sulphite.

Woodfibre Mill:  
E. P. Brennan, Plant Mgr.  
W. A. Bain, Chief Eng.  
William Arnold, Power Plant Eng.  
W. L. McGregor, Master Mech.  
Capacity, Pulp: 230 tons Bleached Sulphite.

## CALIFORNIA-OREGON PAPER MILLS

(Division of Columbia River Paper Mills.)

Los Angeles, Calif.  
F. W. Leadbetter, Pres.  
Theodore Osmund, Vice-pres.  
Treas. Pur. Agt.  
A. M. Cronin, Secy.  
Nils G. Teren, Vice-pres., Mgr.  
J. K. Hays, Mgr. and Asst. Secy.  
Vincent P. Cole, Supt.  
Capacity, Paper: 40 tons Sulphites, 40 tons Sulphates.

## CERTAIN-TEED PRODUCTS CORP.

Headquarters 120 So. La Salle St., Chicago, Ill.

Mill: Richmond, Calif.  
Henry J. Hartley, Pres.  
H. J. Dowd, Vice-Pres., Compt.  
A. O. Graves, Secy.  
A. J. Mohan, Pur. Agt.  
(All above at New York).  
J. F. Meyer, Res. Mgr.  
Capacity, 45 tons Roofing, Felts, Mulching and Building Papers.

## COLUMBIA RIVER PAPER MILLS

Headquarters Office: 815 S. W. Alder St., Portland, Ore.

Mill Office: Vancouver, Wash.  
F. W. Leadbetter, Pres.  
Nils G. Teren, Vice-Pres., Gen. Mgr.  
Theodore Osmund, Vice-Pres.  
Taylor Alexander, Managing Director.  
Ambrose M. Cronin, Jr., Secy.  
W. P. Donnelly, Asst. Secy.  
George E. Miller, Office Mgr.  
Thomas Grant, Sulphite Supt.

W. H. Neal, Chief Engineer.  
Thomas Parks, Master Mech.  
L. E. Orthmann, Saw Mill Supt.  
Capacity, Pulp: 30 tons Mechanical, 140 tons Unbleached Sulphite, 110 tons Bleached Sulphite. Paper: 120 tons Sulphites.

## COOS BAY PULP CORP.

Headquarters Office: Scott Paper Co., Chester, Pa.  
William S. Campbell, Pres.  
J. L. Ober, Vice-Pres.  
C. Wylie Smith, Vice-Pres.  
(Empire, Oregon)  
F. C. McCulloch, Secretary.  
(Portland, Ore.)  
W. R. Scott, 3rd Treasurer.

Mill Office: Empire, Oregon  
Mill: Coos Bay, Oregon  
C. Wylie Smith, General Mgr.  
(Empire, Ore.)

J. D. Fraser, Superintendent.  
George F. Blessing, Office Mgr.  
G. E. McKimmings, Master Mechanic.  
Harold Miller, Chief Chemist.  
Capacity, Pulp: 75 tons unbleached Sulphite.

Mill: Anacortes, Wash.  
(Mill temporarily closed down Nov., 1942.)

J. R. Lewis, Superintendent  
Herman L. Hansen, Office Manager.  
Capacity, Pulp: 90 tons unbleached Sulphite.

## CROWN ZELLERBACH CORPORATION

General Offices: 343 Sansome St., San Francisco, Calif.  
Pulp and Paper Mills: Camas, Port Angeles, Port Townsend, Wash.; Lebanon and West Linn, Oregon; Carthage, N. Y.  
Converting Plants: Harlingen, Texas; Oakland and Los Angeles, Calif.; North Portland, Oregon.

Officers:  
Louis Bloch, Chairman of the Board.  
J. D. Zellerbach, Pres.  
A. B. Martin, Exec. Vice-Pres.  
R. A. McDonald, Exec. Vice-Pres. (Sales).  
H. L. Zellerbach, Exec. Vice-Pres. (Zellerbach Paper Co.).  
Thos. McLaren, Vice-Pres. & Treas.  
Albert Bankus, Vice Pres. (Mfg.)  
J. Y. Baruh, Vice-Pres. (Los Angeles)  
D. B. Denman, Vice-Pres. (Tbr. & Log. Dept.) Seattle.  
A. B. Layton (on leave with U.S.N.).  
F. N. Youngman, Vice-Pres. (Portland)  
G. E. Young, Vice-Pres. (Newsprint)  
A. R. Heron, Vice-Pres. (On leave with U.S.A.).  
D. J. Galen, Secy.  
A. L. Bennett, Comptroller.  
F. A. Drumb, Dir. Indus. & Public Relations.  
Oakley W. Dexter, Purch. Agt. (On leave with WPB)  
Francis T. Bowles, Act. Pur. Agt.  
Carl F. Gaiser, Division Pur. Agt. (Portland)  
John Sullivan, Division Purch. Agt. (Seattle)  
J. J. Seid, Traffic Mgr.  
A. Vander Zwiop, Insurance Supervisor.

CENTRAL TECHNICAL DEPT.  
Camas, Wash.  
W. R. Barber, Technical Dir.  
E. G. Misphey, Asst. Technical Director.

## DIVISIONS

Crown Willamette Paper Co., Division of Crown Zellerbach Corp.

Camas, Wash.  
J. E. Hanny, Res. Mgr.  
G. W. Charters, Asst. Res. Mgr.

A. G. Natwick, Asst. Res. Mgr.  
A. W. Olson, Asst. to Res. Mgr.  
Frank F. Sullivan, Asst. to Res. Mgr.  
G. M. Julien, Asst. to Res. Mgr.  
H. E. Burdon, Office Mgr.  
H. D. Kennedy, Purch. Agt.  
H. M. Green, Order Dept.  
V. C. Gault, Personnel Supvr.  
Mrs. Vera Berner, Asst. to Personnel Supvr.  
J. F. Robertson, Safety Supvr.  
G. H. Galloway, Tech. Supvr.  
Gus Ostenson, Paper Mill Supt.

E. Webberley, Beater Room Supt.  
Paul V. Millard, Finish Room Supt.  
J. V. Savage, Sulphite Mill Supt.  
L. D. McGlothlin, Sulphate Mill Supt.  
F. R. Sievers, Groundwood Foreman.  
J. L. Shively, Bag Factory Supt.

H. W. Duvall, Converting Plant Foreman.  
J. G. Giegler, Napkin Dept. Foreman.

Herman Junge, Woodmill Supt.  
O. T. Defleux, Supt. Steam Plant.

Fred Stevey, Chief Elect.  
Lyall Burnett, Eng. Dept. Supvr.

I. C. Shotwell, Plant Engineer.  
L. W. Morgan, Foreman Pipe Fitters.

Gordon Atkins, Foreman Paper Machine Millwrights.  
Claude Smith, Yard Foreman.  
Clifford Arnold, Shipping Foreman.

Howard Burrell, Real Estate.  
Capacity, Pulp: 90 tons Mechanical, 350 tons Unbleached Sulphite, 150 tons Bleached Sulphite, 195 tons Unbleached Sulphate. Paper: 245 tons Sulphites, 190 tons Sulphates.

Washington Pulp & Paper Corp., Division of Crown Zellerbach Corp.

Port Angeles, Wash.  
R. A. Dupuis, Res. Mgr.  
H. L. Day, Office Mgr.  
Merle Cashman, Personnel & Safety Supvr.

L. L. Dupuis, Gen. Supt.  
W. Edwards, Asst. Supt.  
O. S. Cauvel, Sulphite Supt.  
M. L. Rauch, Groundwood Supt.

T. H. Hargreaves, Maint. Eng.  
G. R. Davison, Woodmill Supt.

J. Somers, Finish Room Foreman.  
W. L. Kidd, Yard Foreman.  
L. E. Warwick, Asst. Maint. Eng.

Harry Larsen, Elec. Foreman.  
W. Locke, Steam Eng.

Capacity, Pulp: 310 tons Mechanical, 60 tons Unbleached Sulphite. Paper: 355 tons Newsprint.

National Paper Products Co., Division of Crown Zellerbach Corp.

Port Townsend, Wash.  
E. W. Erickson, Res. Mgr.  
F. L. Ziel, Asst. Res. Mgr.  
Steve Coney, Personnel & Safety Supvr.

Gerald Hunt, Office Mgr.  
Harold Quigley, Paper Mill Supt.

N. A. Lewthwaite, Pulp Mill Supt.  
A. F. Brunson, Woodroom Foreman.

D. J. Wollam, Steam & Power Eng.

A. J. Bogan, Master Mech.  
E. F. Drake, Chief Elect.  
D. E. Baker, Pipe Foreman.

William Bishop, Yard Foreman.

G. B. Thomas, Finishing & Shipping Foreman.  
Urban Grandaw, Bag Fact. Foreman.

C. Bunge, Tech. Supvr.  
Capacity, Pulp: 295 tons Unbleached Sulphate. Paper: 170 tons Sulphates, 120 tons Board.

Crown Willamette Paper Co., Division of Crown Zellerbach Corp.

Lebanon, Ore.  
M. J. Otis, Res. Mgr.  
H. C. Olds, Office Mgr.

C. E. Ackley, Supt.  
Hugh Croner, Personnel & Safety Supvr.

E. C. Leckband, Master Mech. Mech.  
Louren LaFond, Sulphite Supt.  
J. O. Morris, Steam Plant Eng.

R. D. Waddell, Tech. Supvr.  
R. W. Weeks, Finish Room Foreman.

L. L. Loftin, Purch. Agt.  
Capacity, Pulp: 50 tons Unbleached Sulphite. Paper: 50 tons Sulphites.

Crown Willamette Paper Co., Division of Crown Zellerbach Corp.

West Linn, Ore.  
C. E. Bruner, Res. Mgr.  
C. A. Enghouse, Asst. to Res. Mgr.

Wm. Little, Office Mgr.  
M. A. Willson, Mill Supply Supvr.

H. A. Zirbel, Order & Shipping Supvr.  
J. A. Ream, Personnel & Safety Supvr.

E. H. Nunn, Tech. Supvr.  
R. K. Pratt, Plant Eng.

R. A. Austin, Woodmill Foreman.  
C. A. Baxter, Groundwood Mill Foreman.

Jan Haugerod, Sulphite Mill Foreman.  
J. A. Harris, Paper Mill Supt.

F. A. Hammerie, Finish Foreman.  
E. T. Walker, Chief Steam Eng.

W. S. Boutwell, Chief Elect.  
J. B. Rauch, Yard Foreman.

Capacity, Pulp: 400 tons Mechanical, 125 tons Unbleached Sulphite. Paper: 223 tons Newsprint, 35 tons Sulphites, 99 tons other.

Pacific Mills, Ltd., Canadian Subsidiary of Crown Zellerbach Corp.

Executive Offices: Vancouver, B. C.

Mills: Ocean Falls, B. C., and Vancouver, B. C.

Officers:  
A. B. Martin, Pres.  
J. A. Young, Vice-Pres. & Treas.

H. C. Pim, Vice-Pres.  
J. H. Lawson, Secy.

R. H. R. Young, Res. Mgr.  
J. Petrie, Asst. Res. Mgr.

Kenneth Logan, Tech. Supvr.  
G. J. Bryant, Master Mech.

A. M. Charleson, Woodmill Foreman.  
C. F. Kelley, Paper Mill Supt.

W. E. Locke, Plant Eng.  
Norman Stables, Sulphite Supt.

A. Palmer, Groundwood Supt.  
E. Walloe, Sulphate Supt.

S. Jemson, Steam Plant Eng.  
Capacity, Pulp: 230 tons Mechanical, 90 tons Unbleached Sulphite, 135 tons Unbleached Sulphate. Paper: 240 tons Newsprint, 47 tons Sulphites, 105 tons Sulphates.



**EL REY PRODUCTS CO.**

Alhambra Ave. & San Pablo St.  
Los Angeles, Calif.

Robert E. Brown, Pres.  
Joseph Brown, Jr., Vice-Pres.,  
Gen. Mgr.  
Harold D. Brown, Secy.  
Capacity: 33 tons Roofing, Car  
Lining, Industrial Flooring.

**EVERETT PULP & PAPER CO.**

P. O. Box 1008,  
Everett, Wash.

Mill: Everett, Wash.

W. J. Pils, President & Mgr.  
A. B. Moody, Vice-Pres., Asst.  
Mgr. & Treas.  
L. F. Fortier, Gen. Supt.  
K. A. Knudson, Purch. Agt.  
F. M. Van-Schaik, Traf. Mgr.  
C. B. Niel, Supt. Maint. &  
Power.  
G. H. Hart, Chief Elect.  
John Shedd, Chief Chem.  
J. J. Murphy, Convert. Plant  
Supt.  
Vern Moore, Finish. Room  
Supt.  
J. C. Hayes, Forester.  
G. A. Blomberg, Sec. & Asst.  
Treas.  
C. L. Pitcher, Master Mech.  
Fred Buckley, Asst. Chief  
Eng.  
H. Radford Russell, Asst. Paper  
Mill Supt.  
E. H. Ahues, Safety Eng.  
R. A. Gates, Mgr., Main Mill  
Sales, San Francisco.  
John E. Horton, Mgr., Stat'y  
& Tablet Dept. Sales, San  
Francisco.  
A. A. Ernst, Mgr., Sales Office,  
Los Angeles.  
H. E. Stewart, Sales Office,  
Everett.  
Jerry LeCuyer, Sales Office,  
Everett.  
Capacity: Pulp: 60 tons Soda.  
Paper: 70 tons Book.

**EVERETT PULP & PAPER CO.**

(Formerly Cascade Paper Co.)

West Tacoma, Wash.  
Mill Idle.

W. J. Pils, President & Mgr.  
A. B. Moody, Vice-Pres., Asst.  
Mgr. & Treas.  
G. A. Bloomberg, Sec. & Asst.  
Treas.  
L. F. Fortier, Gen. Supt.  
A. N. Drips, Mill Mgr.  
Capacity: Paper: 35 tons Book.

**FERNSTROM PAPER MILLS, INC.**

1450 West Holt Ave.  
Pomona, Calif.

Operating Organization:

F. O. Fernstrom, Pres.  
J. E. Maurer, Asst. to Pres.  
J. W. Genuit, Vice-Pres. &  
Sales Mgr.  
B. R. Neljfer, Vice-Pres. in  
charge of Southern Div.,  
Fernstrom Paper Mills, Inc.  
C. G. Frampton, Supt.  
R. S. Buckley, Chief Chemist.  
R. A. Baum, Asst. Chief  
Chemist.  
E. G. Swanberg, Production  
Mgr.  
R. L. Carr, Chief Accountant.  
M. A. Moss, Asst. to Plant  
Engineer.  
J. H. Vought, Purchasing Agt.  
F. W. Scrimmes, Credit, Traf-  
fic Mgr., Asst. Sec.  
J. B. Christopher, Asst. Supt.  
Albin Nelson, Asst. Supt.  
F. D. Backer, Foreman Prtg.  
S. B. Stevenson, Foreman  
Converting.  
F. M. Schmidt, Shipping Clerk.  
Board of Directors:  
Erik Fernstrom, Chairman of  
Board.  
F. O. Fernstrom, Pres.  
H. G. Miller  
W. H. Johnson  
D. P. Nichols, Secretary.  
J. A. Maurer, Vice-Pres.,  
Treas.  
Capacity: Paper: 50 Tissues.

**FIBREBOARD PRO-  
DUCTS, INC.**

General Offices: 710 Russ Bldg.  
San Francisco, Calif.

Mills: Pulp and Board, Port  
Angeles, Wash.; Board Mills  
and Converting Plants, Anti-  
och, Los Angeles (Vernon),  
and Stockton, Calif.; Sumner,  
Wash.; Binder Board Mill, Los  
Angeles, Calif.; Converting  
Plants, San Francisco and  
Southgate, Calif., and Port-  
land, Ore.

Officers:

J. D. Zellerbach, Chairman of  
the Board.  
D. H. Patterson, Jr., Pres. &  
Gen. Mgr.  
T. Noel Bland, Vice-Pres. &  
Asst. Gen. Mgr.  
N. M. Brisabols, Vice-Pres. in  
Chg. of Operations (Stock-  
ton)  
E. J. Farina, Vice Pres. in  
Chg. of Sales.  
V. C. Hobbs, Secy.  
J. F. Garvin, Treas.  
H. L. Weber, Purch. Agt.  
A. H. Lincoln, Traffic Mgr.

**DIVISIONS****PORT ANGELES DIVISION**

1313 Marine Drive,  
Port Angeles, Wash.

C. V. Bason, Res. Mgr.  
F. C. Nash, Office Mgr.  
Nelson Hartnagel, Chief Chem.  
& Asst. Res. Mgr.  
R. O. Holcomb, Asst. Chief  
Chem.  
J. W. Bonnar, Chief Engineer.  
Fred Miller, Chief Electrician.  
T. H. Beaume, Sulphite Mill  
Supt.  
E. J. Cavanaugh, Resident  
Eng.  
J. H. Clay, Machine Foreman.  
C. F. Meagher, Board Mill  
Supt.  
R. G. Stanard, Finish. Room  
Supt., Ship.  
R. A. Lawrence, Personnel  
Mgr.  
A. F. Benson, Master Mech.  
G. M. Marvin, Purch. Agent.  
H. E. Shellhaer, Machine  
Foreman.

Capacity: Pulp: 25 tons Me-  
chanical, 65 tons Unbleached  
Sulphite. Paper: 65 tons  
Board.

**SUMNER DIVISION**

Sumner, Wash.

M. E. Sanford, Res. Mgr.  
A. J. Erickson, Office Mgr.  
J. J. Sperl, Plant Eng., Mas-  
ter Mech.  
R. W. Vaughan, Chief Chem.,  
(Safety Supvr.)  
R. J. Boyle, Chief Elect.  
W. Talkington, Prod. Mgr.  
H. O. Meyers, Bd. Mill Supt.  
V. M. Buchanan, Night Bd.  
Mill Supt.  
J. H. Dunn, Convert. Plant  
Supt.  
L. O. Fox, Asst.  
V. M. Gerhard, Personnel  
Mgr. Paymaster.  
F. W. Hilliard, Purch. Agt.  
J. T. Stahlhut, Shipping Supt.  
Capacity: Paper: 75 tons Board.

**PORTLAND DIVISION**

50 N. E. Oregon St.  
Portland, Ore.

J. B. Martin, Jr., Res. Mgr.  
E. E. Olsson, Office Mgr.  
S. G. Pettitt, Superintendent.  
Folding cartons, set up boxes,  
labels.

**SUNSET DIVISION**

3720 South Soto St.  
Los Angeles, Calif.

Bruce F. Brown, District Mgr.  
H. D. Owen, Plant Mgr.  
D. H. Stein, Board Mill Supt.  
Capacity: 8 tons Board.

**VERNON DIVISION**

4444 Pacific Blvd.  
Los Angeles, Calif.

Harvey M. Brown, Res. Mgr.  
Bruce F. Brown, Manager  
Southern District.  
H. L. Miller, Office Mgr.  
Bruce F. Brown, Jr., Chief  
Chemist.  
E. Wilhelm, Chief Engineer.

**PACIFIC PULP & PAPER INDUSTRY**

Frank Wheelock, Board Mill  
Manager.  
George Eberhard, Board Mill  
Supt.

M. G. Brown, Master Mech.  
A. J. Smith, Purch. Agt.  
B. J. Flynn, Supt. of Ship.  
R. C. Cotner, Credit Mgr.  
E. Switzer, Night Board Mill  
Supt.  
A. Dahl, Night Board Mill  
Supt.  
F. Crotchett, Night Board Mill  
Supt.  
Walter Pittman, Plant Eng.  
O. C. Majors, Dist. Sales Mgr.  
J. A. McDaniel, Asst. District  
Sales Mgr.  
George F. Ford, Converting  
Plant Mgr.  
Robt. Walters, Convert. Plant  
Supt.

Capacity: Paper: 150 tons Board.

**SOUTH GATE DIVISION**

4222 Santa Ana St.  
South Gate, Calif.

L. B. Garlick, Jr., Res. Mgr.  
E. Chapel, Office Mgr.  
E. D. Conner, Plant Eng.  
F. W. Hill, Converting Plant  
Supt.  
H. Reed, Personnel Dept.  
Oscar Hallburn, Chief Acc't.  
T. D. Halliwell, Warehouse  
Foreman.  
Wm. G. Russell, Shipping  
Foreman.  
Corrugated Board.

**ANTIOCH DIVISION**

Antioch, Calif.

G. W. Harter, Res. Mgr.  
M. A. Rodrigues, Office Mgr.  
W. Hawkey, Asst. Mgr.  
Chas. M. Meyers, Supt.  
C. M. Stitt, Plant Eng.  
E. O'Conner, Chief Chem.  
Walter Altizer, Chief Eng.  
Paul Ayres, Chief Electrician.  
Capacity: Paper: 200 tons Board.

**STOCKTON DIVISION**

Stockton, California

Paul H. Keller, Res. Mgr.  
W. W. Burke, Off. Mgr.  
Don Monk, Plant Eng.  
V. L. Rammer, Chief Chemist  
V. A. Young, Chief Eng.  
S. E. Stites, Chief Elect.  
J. A. Quinn, Purch. Agt.  
A. E. Bolter, Conv. Plt. Supt.  
(Carton)  
Harry Lavezey, Conv. Plt.  
Supt. (Container)  
Les Mullins, Bd. Mill Supt.  
Nels Anderson, Designing Eng.  
Chas. Orr, Supt. (Mainte-  
nance)  
Capacity: Paper: 260 tons Board.

**SAN FRANCISCO DIVISION**

1789 Montgomery Street  
San Francisco, Calif.

M. J. McAuliffe, Plant Supt.  
D. R. Hay, Office Mgr.  
H. W. Waddington, Plant Eng.  
A. Mark, Shipping & Ware-  
house Supt.

**FIR-TEX INSULATING  
BOARD CO.**

Box 1186

St. Helens, Oregon

Peter Kerr, Pres.  
James McDonald, Vice-Pres.  
R. W. Simerai, Vice-Pres.,  
Gen. Mgr., Purch. Agt.  
George Quigg, Gen. Supt.  
John S. Coke, Sec.  
N. J. Barbare, Treas.  
Roy Huntzinger, Plant Eng.  
Glenn W. Cheney, Sales Mgr.  
J. G. Long, Technical Dir.  
Raymond Hoxsey, Chief Elect.  
Eugene Hegele, Off. Mgr.  
John Robinson, Asst. Chem.  
J. C. Moore, Supt. Shippg.  
& Finish.  
Capacity: 250,000 sq. ft. Wood  
Fibre Insulating Board daily  
on 1/2-inch basis.

**FLINTKOTE CO.**

(Pioneer Division).

Los Angeles, Calif.

I. J. Harvey, Pres.  
L. M. Simpson, Vice-Pres.,  
Gen. Mgr.  
W. A. Kinney, Prod. Mgr.  
Glen A. Phillips, Supt.  
C. T. Crawley, Purch. Agt.  
John Van Ounsem, Tech. Dir.

M. E. Campbell, Chief Chem.  
Dr. John J. Stanko, Research  
Dir.  
A. E. Carlson, Sales Mgr.  
Board Div.  
Capacity: Paper: 150 tons Board,  
70 tons other.

**FRY ROOFING CO.,  
LLOYD A.**

Headquarters Office: 5302 W.  
66th St., Chicago, Ill.

Mill: 3750 N. W. Yeon Ave.  
Portland, Ore.

B. B. Alexander, Gen. Mgr.  
L. W. Woodward, Off. Mgr.  
Capacity: Paper: 180 tons As-  
phalt Prepared Roofing.

**GRAYS HARBOR PULP  
& PAPER CO.**

Headquarters Office: Hammer-  
mill Paper Co., Hammermill  
Rd., Erie, Pa.

Mill Office: Hoquiam, Wash.

N. W. Wilson, Pres.  
D. S. Leslie, Vice-Pres.  
W. S. Lucey, Vice-Pres. &  
Gen. Mgr. (Seattle)  
W. F. Bromley, Sec.  
J. D. Sullivan, Purch. Agt.  
Lyall Tracy, Res. Mgr.  
J. W. Bagwell, Asst. Mgr.  
Larry Hay, Office Mgr.  
J. C. Mannion, Paper Mill  
Supt.  
L. G. Pfeffer, Paper Finish.  
Supt.  
G. W. McKay, Personnel &  
Safety Supr.  
Capacity: Paper: 68 tons Sul-  
phites.

**HAWLEY PULP &  
PAPER CO.**

Oregon City, Oregon

John H. Smith, Pres., Gen.  
Mgr.  
Carl E. Braun, Vice-Pres.,  
Mill Mgr.  
Austin Nickels, Gen. Supt.  
Louis Woerner, Sec.  
M. R. Lindie, Asst. Treas.  
E. Stoddard, Office Mgr.  
K. G. Urfer, Purch. Agt.  
Carl A. Sholdebrand, Sulphite  
Supt.  
A. D. Hoesfeldt, Sales Mgr.  
E. Schwietz, Plant Eng.  
L. Smith, Convert. Plt. Supt.  
Clyde Helsby, Finish. Supt.  
F. Weleber, Chief Chem.  
L. Johnson, Chem.  
J. A. Wilson, Asst. Mill Mgr.,  
Asst. Sec.  
James Hollender, Master Mech.  
Paul Troch, Sales Dept.  
W. B. O'Malley, Sales Dept.  
Sherman Hall, Sales Dept.  
Capacity: Pulp: 205 tons Me-  
chanical, 105 tons Unbleached  
Sulphite. Paper: 130 tons  
newsprint, 40 tons Sulphites.

**INLAND EMPIRE  
PAPER COMPANY**

Millwood, Wash.

A. W. Witherspoon, Pres.  
L. A. Stilson, Vice-Pres.  
C. A. Buckland, Gen. Mgr.  
W. W. Witherspoon, Secy-  
L. Treason  
J. L. Janacek, Gen. Supt.  
M. W. Black, Sulphite Supt.,  
Tech Dir.  
J. H. Butler, Jr., Pur. Agt.  
Capacity: Pulp: 90 tons Me-  
chanical, 33 tons Unbleached  
Sulphite. Paper: 65 tons  
Newsprint, 40 tons Sulphites.

**JOHNS-MANVILLE  
PRODUCTS CORP.**

Headquarters Office: 22 East  
40th St., New York, N. Y.

Mill Office: Pittsburg, Calif.

W. B. Kelley, Factory Mgr.  
L. Bardsley, Supt. Paper Mill.  
H. T. Brodersen, Chief Chem.  
F. V. Galbraith, Personnel  
Mgr.  
H. E. Miller, Plant Eng.  
J. J. Shirley, Traffic Mgr.  
Capacity: 30 tons Asbestos  
Paper.

**LONGVIEW FIBRE COMPANY**

Longview, Washington

H. L. Wollenberg, Pres.  
D. C. Everest, Vice-Pres.  
C. J. Schoo, Vice-Pres.  
R. S. Wertheimer, Vice-Pres., Res. Mgr.  
L. C. Peabody, Secy., Treas., Asst. to Pres.  
Tony Siebers, Paper Mill Supt.  
William E. Clarke, Asst. Paper Mill Supt.  
R. G. Armstrong, Asst. Secy.  
C. R. Adams, Asst. Treas.  
Carl Fahlstrom, Asst. Res. Mgr.  
C. J. Bastedo, Sales Mgr.  
H. Hoehne, Pulp Mill Supt.  
M. V. Roley, Bag Mill Supt.  
W. D. Riggs, Chief Eng.  
J. W. Schuh, Chief Elec. Eng.  
Mike Price, Fin. Room & Shipping Supervisor.  
D. H. Cairns, Chief Clerk, Paper Dept.  
Dave Watson, Purch. Agt.  
A. A. Wilcox, Process. Eng.  
C. J. Page, Box Pit. Supt.  
Joe Fotheringham, Safety Eng.  
Boyd Wickwire, Personnel Mgr.  
W. E. Thompson, Supt. Construction.  
H. W. Dauserman, Paper Mill Tour Boss.  
H. J. Drew, Paper Mill Tour Boss.  
C. J. Dupras, Paper Mill Tour Boss.  
Roy McCallum, Paper Mill Tour Boss.  
W. A. Wenzel, Pulp Mill Tour Boss.  
J. G. Carson, Pulp Mill Tour Boss.  
J. L. LaPointe, Pulp Mill Tour Boss.  
Gebhart Becker, Pipefitter Foreman.  
C. G. Ditter, Chief Clk., Bag Plant.  
F. A. Horn, Maint. Millwright.  
Virgil M. Sutherland, Chief Instr. Man.  
Capacity: Pulp: 100 tons Mechanical, 350 tons Unbleached Sulphate. Paper: 210 tons Sulphates, 230 tons Board.

**OREGON PULP & PAPER CO.**

Salem, Oregon

F. W. Leadbetter, Pres.  
Theodore Osmond, Vice-Pres.; Fur. Agt.  
Nils G. Teren, Vice-Pres., Gen. Mgr.  
A. M. Cronin, Secy.  
W. S. Walton, Treas.  
K. W. Heinlein, Res. Mgr.  
J. D. Kaester, Jr., Paper Mill Supt.  
Edward A. Weber, Sulphite Supt.  
O. F. Wegner, Master Mech.  
Capacity: Pulp: 20 tons Unbleached Sulphite, 110 tons Bleached Sulphite. Paper: 120 tons Sulphites.

**PACIFIC PAPER BOARD COMPANY**

Longview, Washington

E. E. Flood, Pres.  
Arthur C. Zimmerman, Vice-Pres., & Mgr.  
T. J. Kennedy, Sec., Treas., Chg. of Sales.  
Lloyd E. Utter, Vice-Pres.  
E. W. Truman, Asst. Sec.  
F. D. Geiger, Asst. Sec.  
Henry Armstrong, Purch. Agt.  
Ralph Mason, Chief Eng.  
Carl Troxel, Asst. Chief Eng.  
Kenneth Gordon, Prod. Mgr.  
A. Duve, Paper Supt.  
Capacity: Pulp: 30 tons Mechanical. Paper: 80 tons Board.

**PACIFIC COAST PAPER MILLS OF WASH., INC.**

Bellingham, Washington

J. J. Herb, Pres.  
J. J. Herb, Vice-Pres. & Gen. Mgr.  
V. A. Hughes, Secy.  
William McCush, Treas.  
F. J. Onkels, Plant Supt., Purch. Agt.  
George Johnstone, Master Mechanic.  
William Dynes, Finish. Room Supt.  
F. J. Block, Shppg. Foreman.  
Capacity: Paper: 22 tons Sulphites.

**PACIFIC COAST PULP & PAPER CO.**

Richvale, California

D. M. Thomson, Pres.  
Capacity: Pulp: 5 tons Soda.

**THE PARAFFINE COMPANIES, INC.**

Emeryville, California

R. S. Shainwald, Ch. Bd.  
W. H. Lowe, Pres.  
R. H. Shainwald, Exec. Vice-Pres.  
C. C. Gibson, Vice-Pres. & Treas.  
R. Hilliard, Vice-Pres. in Chg. Sales.  
F. M. Prince, Vice-Pres. in Chg. Export.  
F. M. Tussing, Mgr. of Mfg.  
R. H. Ohea, Secy.  
R. E. Dexter, Asst. Secy.  
C. E. Howard, Asst. Secy.  
F. M. Stires, Asst. Secy.  
W. W. Bott, Asst. Treas., Asst. Secy.  
Jean Holmes, Asst. Treas.  
R. S. Bond, Asst. Treas.  
J. H. Varley, Mill Supt.  
A. H. Silverstone, Purch. Agt.  
G. T. Kurtz, Chief Chemist.  
S. A. Cohen, Dir. Research & Development.  
Fred W. Rea, Mgr., Public & Ind. Relations Depts.  
William Gittere, Supt. Power Plant.  
W. B. Stitt, Supt. Paint.  
W. A. Magee, Mgr. Prod. Control.  
I. Hovgaard, Asst. Mgr. Mfg.  
L. Seifert, Supt. Shppg.  
Capacity: 120 tons Roofing and Felts, Floor Covering.

**POWELL RIVER CO., LTD.**

Headquarters Office: 1204 Standard Bank Bldg., Vancouver, B. C.

Mill Office: Powell River, B. C.  
S. D. Brooks, Ch. Bd. Dir.  
Harold S. Foley, Pres.  
R. Bell-Irving, Vice-Pres.  
G. F. Laing, Vice-Pres.  
J. H. Lawson, Secy.  
C. Hill, Asst. Secy.  
J. N. Turvey, Comptroller.  
D. A. Evans, Res. Mgr.  
Russell M. Cooper, Gen. Supt.  
R. A. Baker, Purch. Agt.  
Ross Black, Mech. Supt.  
R. C. Bledsoe, Chief Chem.  
Harold Moorhead, Res. Engineer.  
F. J. Hamilton, Sulphite Mill Supt.  
W. E. MacGillivray, Groundwood Supt.  
F. R. Riley, Paper Mill Supt.  
J. F. Flett, Employment Supt.  
A. H. Robertson, Plant Eng.  
E. G. Craigen, Elec. Supt.  
T. A. Wyborn, Steam Plant Supt.  
J. McIntyre, Safety Eng.  
I. H. Andrews, Control Supt.  
O. Crawford, Traffic Mgr.  
Angus Armour, Order & Shppg. Dept. Head.  
H. B. Urquhart, Asst. Groundwood Mill Supt.  
W. A. Snyder, Asst. Paper Mill Supt.  
N. C. Fraser, Finish. Room Supt.  
A. W. DeLand, Mgr. Forest Dept.  
Daily Capacity: Newsprint paper: 720 tons. Mechanical Pulp: 656 tons; Chemical Pulp: 155 tons. Strong Unbleached Sulphite Pulp for sale: 130 tons.

**FUGET SOUND PULP & TIMBER CO.**

Bellingham, Washington

Fred G. Stevenot, Pres. & Dir.  
Lawson P. Turcotte, Executive Vice-Pres. & Director.  
Harry M. Robbins, Vice-Pres. & Director.  
Ralph H. Miller, Dir.  
J. L. Rucker, Dir.  
Dr. William C. Keyes, Dir.  
Harry A. Binzer, Secretary.  
William Sealy, Treasurer.  
Don Smith, Purch. Agt.

Erik Ekholm, Gen. Supt.  
Ralph M. Robert, Sales Mgr., and Vice-Pres.  
H. D. Cavin, Resident. Eng.  
Eric Ericsson, Technical Dir.  
Frank Brown, Master Mech.  
Robert H. Evans, Legal Counsel & Dir.  
Russell E. de Lopez, Traffic Mgr.  
Carl V. Sahlin, Mgr. Logging Dept.  
Glenn Crout, Shppg. Clerk.  
Capacity: Pulp: 480 tons Unbleached Sulphite.

**RAYONIER INCORPORATED**

Head Office: 343 Sansome St.

San Francisco, Calif.  
Mills: Shelton, Hoquiam, Port Angeles and Tacoma, Washington; Fernandina, Florida.  
Edward M. Mills, Pres.  
J. D. Zellerbach, Exec. Vice-Pres.  
Charles H. Conrad, Secy-Treas.  
L. G. Wilson, Comptroller.  
Seattle Office: 719 White Bldg.  
Seattle, Wash.  
M. B. Houston, Vice-Pres.  
Arthur W. Berggren, Asst. to Vice-Pres.  
W. S. Lucey, Gen. Mgr. of Operations (Seattle) four Washington Mills.  
John Sullivan, Purch. Agt.  
H. E. Kerry, Traffic Dir.  
R. M. Pickens, Tech. Dir., Shelton, Wash.  
A. N. Farrett, Research Dir., Shelton, Wash.  
New York Office: 122 East 42nd Street.  
Stewart E. Seaman, Director of Sales.

**DIVISIONS****GRAYS HARBOR DIVISION**

Hoquiam, Washington

Lyall Tracy, Res. Mgr.  
John Bagwill, Asst. Mgr.  
Larry Ray, Office Mgr.  
O. R. McDonald, Pulp Mach. Room Supt.  
Capacity: Pulp: 300 tons Bleached Sulphite.  
A. Gustin, Sulphite Mill Supt.  
C. H. Woodford, Woodroom Supt.  
L. R. Wood, Plant Eng.  
W. G. Clayton, Steam Plant Eng.  
A. S. Boag, Chief Elect.  
L. G. Pfeiffer, Pulp Finish. Supt.  
O. N. Sangder, Chief Chem.  
Olavi Aho, Asst. Chief Chem.  
G. W. McKay, Personnel & Safety Suprv.

**PORT ANGELES DIVISION**

Port Angeles, Wash.

W. E. Breitenbach, Res. Mgr.  
H. A. Sprague, Asst. Res. Mgr.  
C. T. Mulledy, Supt.  
J. G. Hardy, Asst. Supt.  
S. W. Grimes, Personnel & Safety Suprv.  
Otto Frame, Pulp Mach. Rm. Supt.  
G. L. Johnston, Sawmill & Shipping Plant Supt.  
Meder Johnson, Res. Eng.  
Fred Dangerfield, Mstr. Mech.  
Pat Cannon, Steam Pit. Supt.  
Floyd Gossard, Pulp Finish. Foreman.  
H. Springer, Chief Elect.  
H. T. Fretz, Chief Chem.  
Henry V. Charnell, Jr., Asst. Chief Chem.  
Myron A. Scott, Office Mgr.  
Capacity: Pulp: 260 tons Bleached Sulphite.

**SHELTON DIVISION**

Shelton, Wash.

George Cropper, Res. Mgr.  
F. R. Pearson, Asst. Mgr.  
A. S. Viger, Supt.  
M. C. Kaphingst, Asst. Supt.  
C. L. Dunseath, Office Mgr.  
Merrick Buttrick, Personnel & Safety Suprv.  
L. E. Attwood, Pulp Mach. Rm. Supt.  
A. J. Ferguson, Woodroom Supt.  
J. G. E. Ellis, Plant Eng.  
W. F. McCann, Master Mech.  
W. A. McKenzie, Steam Pit. Eng.  
V. W. Kullrich, Chief Elect.  
V. T. Morgan, Pulp Finish. Foreman.  
Winston Scott, Chief Chem.  
G. C. Eck, Asst. Chief Chem.  
Capacity: Pulp: 200 tons Bleached Sulphite.

**ST. HELENS PULP & PAPER CO.**

St. Helens, Oregon

Max Oberdorfer, Pres., Gen. Mgr.  
Dr. Robert H. Ellis, Vice-Pres.  
Max Oberdorfer, Jr., Plant Engineer.  
Irving T. Rau, Sec., Treas., Purch. Agt.  
Sverre Strom, Mech. Engr.  
R. E. Drane, Chief Chem.  
A. A. Weber, Asst., Off. Mgr.  
L. V. Radke, Asst. Chem.  
C. W. Sherman, Mgr. Bag Mill, Mgr. Converting Dept.  
C. V. Smith, Chief Elect.  
B. Pasero, Dir. Personnel.  
J. Zaniker, Fin. Room Supt., Shppg. Supt.  
H. R. O'Dell, Maint. Supt.  
F. Monahan, Paper Mill Supt.  
Ray Brown, Pulp Mill Supt.  
Chester Gillihan, Safety Eng.  
H. C. Carswell, Timber Mgr.  
J. A. Moore, Traffic Mgr.  
Capacity: Pulp: 180 tons Unbleached Sulphate. Paper: 150 tons Sulphates.

**ST. REGIS PAPER COMPANY****KRAFT PULP DIVISION**

Headquarters Office: 230 Park Ave. New York, N. Y.

Mill Office: Tacoma, Wash.

(Mill temporarily closed down Nov. 1942)

Roy K. Ferguson, Pres.  
Walter Delong, Vice-Pres.  
J. Lamb, Purch. Agt.  
Paul Holmes, Chief Eng.  
W. J. Thomas, Chief Elect.  
Ivan Ginrich, Office Mgr.  
Capacity: Pulp: 325 tons Unbleached Sulphate Pulp.  
Bleaching Capacity, 250 tons.

**SIDNEY ROOFING & PAPER CO., LTD.**

Victoria, British Columbia.

R. W. Mayhew, President.  
C. Alan Mayhew, Vice-Pres. & Treasurer.  
Logan Mayhew, Manag. Dir., Purch. Agt.  
A. D. Macfarlane, Secy.  
H. D. Genn, Adv. Mgr.  
M. Thom, Supt.  
A. J. Saunders, Pit. Eng. (Mech.)  
G. M. Lindsay, Beater Foreman.  
Capacity: Pulp: 10 tons Mechanical. Paper: 25 tons Board, 18 tons other.

**SORG PULP CO., LTD.**

General Office: Vancouver, B. C.

Mill: Port Mellon, British Columbia.

J. A. Aull, Pres.  
D. Driscoll, Exec. Vice-Pres.  
H. N. Simpson, Gen. Mgr.  
R. H. Tupper, Legal Repr. in B. C.  
Trig Iversen, Gen. Supt.  
Capacity: Pulp: 120 tons Unbleached Sulphate.

**SOUNDVIEW PULP CO.**

Everett, Wash.

Walter A. Starr, Chair. Bd. Dir.  
U. M. Dickey, Pres.  
H. H. Fair, Vice-Pres. & Treas.  
L. S. Burdon, Gen. Mgr.  
G. J. Armbruster, Gen. Supt.  
S. A. Salmonson, Asst. Supt.  
H. L. Barbash, Secy.  
Miss E. Johnson, Purch. Agt.  
N. W. Coster, Tech. Dir.  
Arthur E. Duke, Master Mech.  
J. H. McCarthy, Res. Eng.  
Carl A. Ramstad, Chg. Instrumentation.  
Capacity: Pulp: 550 tons Bleached Sulphite.

**SPAULDING PULP & PAPER COMPANY**

Box 70.  
Newberg, Ore.  
J. C. Compton, Pres., Gen. Mgr.

E. Fred Emery, Vice-Pres.  
O. M. Allison, Sec., Treas.  
J. B. Wilt, Res. Mgr.  
Ralph Reid, Chief Chem.,  
H. M. Washbond, Auditor.  
Capacity, Pulp: 80 tons Unbleached Sulphite.

**UNITED STATES GYPSUM COMPANY**

Southgate, (Los Angeles) Calif.  
F. W. Adams, Mill Mgr.

W. T. Tillotson, Mgr. Roofing Paper Dept.  
J. E. Hartford, Paper Machine Supt.

Capacity, Paper: 70 tons Board, 50 tons other.

**VOLNEY FELT MILLS**

Compton Calif.

Lloyd A. Fry, Pres.  
H. F. Coleman, Vice-Pres.  
J. J. Kennedy, Secy.  
J. F. Fisher, Treas.  
O. A. Bigler, Mill Mgr.  
A. H. Gardenhire, Purch. Agt.  
J. Coleman, Supt.

Capacity: 30 tons Felts.

**PACIFIC PULP & PAPER INDUSTRY****WEST COAST PAPER BOARD MILLS, INC.**

Los Angeles, California.  
W. H. Kewell, Director.  
Capacity, Paper: 20 tons Chip Board.

**WESTMINSTER PAPER COMPANY, LTD.**

New Westminster, B. C.  
J. J. Herb, Pres.  
E. M. Herb, Vice-Pres., Gen. Mgr.  
R. C. Onkels, Supt.  
J. Ashby, Purch. Agt.  
Cliff Radcliff, Sales Mgr.  
V. Hakkinen, Master Mech.  
Capacity, Paper: 25 tons Sulphites.

**WEYERHAEUSER TIMBER CO.****PULP DIVISION**

Longview, Washington.  
R. B. Wolf, Mgr.  
Mill No. 1, Longview, Wash. (Cowlitz County)  
W. N. Kelly, Mgr.  
E. P. Wood, Tech. Dir.  
D. K. MacBain, Plant Eng.  
P. F. Miescke, Office Mgr.  
C. L. McPhail, Purch. Agt.  
Capacity, Pulp: 250 tons Bleached Sulphite.  
Mill No. 2, Everett, Wash. (Snohomish County)  
R. J. LeRoux, Mgr.  
H. W. Bialkowski, Tech. Dir.  
G. F. Alcorn, Plant Eng.  
O. E. Fox, Office Mgr.  
R. M. Inkster, Pur. Agt.  
Capacity, Pulp: 280 tons Unbleached Sulphite.

## Pacific Coast Mill Capacities Change Slightly in 1942-1943

● The daily capacity table for all Pacific Coast pulp and paper mills, published on pages 42-43, reveals an expansion of 771 tons per day between May 1, 1941 and May 1, 1943. But there was only a bare nine-ton expansion in the second year. (Elsewhere in this review issue, reports show actual production fell off during most of this period owing to shortages in manpower and materials.)

Unbleached sulphite pulp capacity gained 270 tons per day in two years. Bleached sulphite showed a gain of 150 tons a year ago but lost 100 of it in the past year. Sulphate pulp capacity gained 120 tons per day in two years but groundwood pulp capacity is just about back where it stood in May of 1941.

In capacities for paper production, it will be noted, there has been little change except under the heading "others." The paper products under this heading increased 218 tons per day in two years, mostly in the past year. These products include roofing, flooring and building papers.

### PACIFIC COAST MILL CAPACITIES (In Tons Per Day)

(These are capacities reported to PACIFIC PULP & PAPER INDUSTRY by United States (Pacific Coast) and British Columbia mills as of May 1 of each year. The table also shows increases and decreases from previous years.)

	1941	1942	1943
Unbleached Sulphite Pulp.....	1908	2163 (+ 255)	2178 (+ 15)
Bleached Sulphite Pulp.....	2290	2240 (- 150)	2340 (- 100)
Sulphate Pulp .....	1380	1560 (+ 180)	1600 (+ 40)
Groundwood Pulp .....	2235	2291 (+ 56)	2251 (- 40)
Soda Pulp .....	65	65	65
Total Pulp .....	7878	8519 (+ 641)	8434 (- 85)
Sulphite Papers .....	963	1024 (+ 61)	972 (- 52)
Sulphate Papers .....	830	850 (+ 20)	865 (+ 15)
Newsprint .....	1805	1756 (- 49)	1753 (- 3)
Paperboard .....	1468	1468	1483 (+ 15)
Book Paper .....	105	95 (- 10)	95
Others .....	705	804 (+ 99)	923 (+ 94)
Total Paper .....	5876	5997 (+ 121)	6091 (+ 94)

## Pulp Production Slumps in 1943; Stevenot Cites Reason

● Wood pulp production in the United States in the first quarter of 1943 was about 18.5 per cent lower than in the comparable period of 1942 (an all-time record year), according to Fred G. Stevenot, president, Puget Sound Pulp & Timber Co. Production of chemical pulps declined 17:15 per cent and of mechanical pulp, 22.8 per cent.

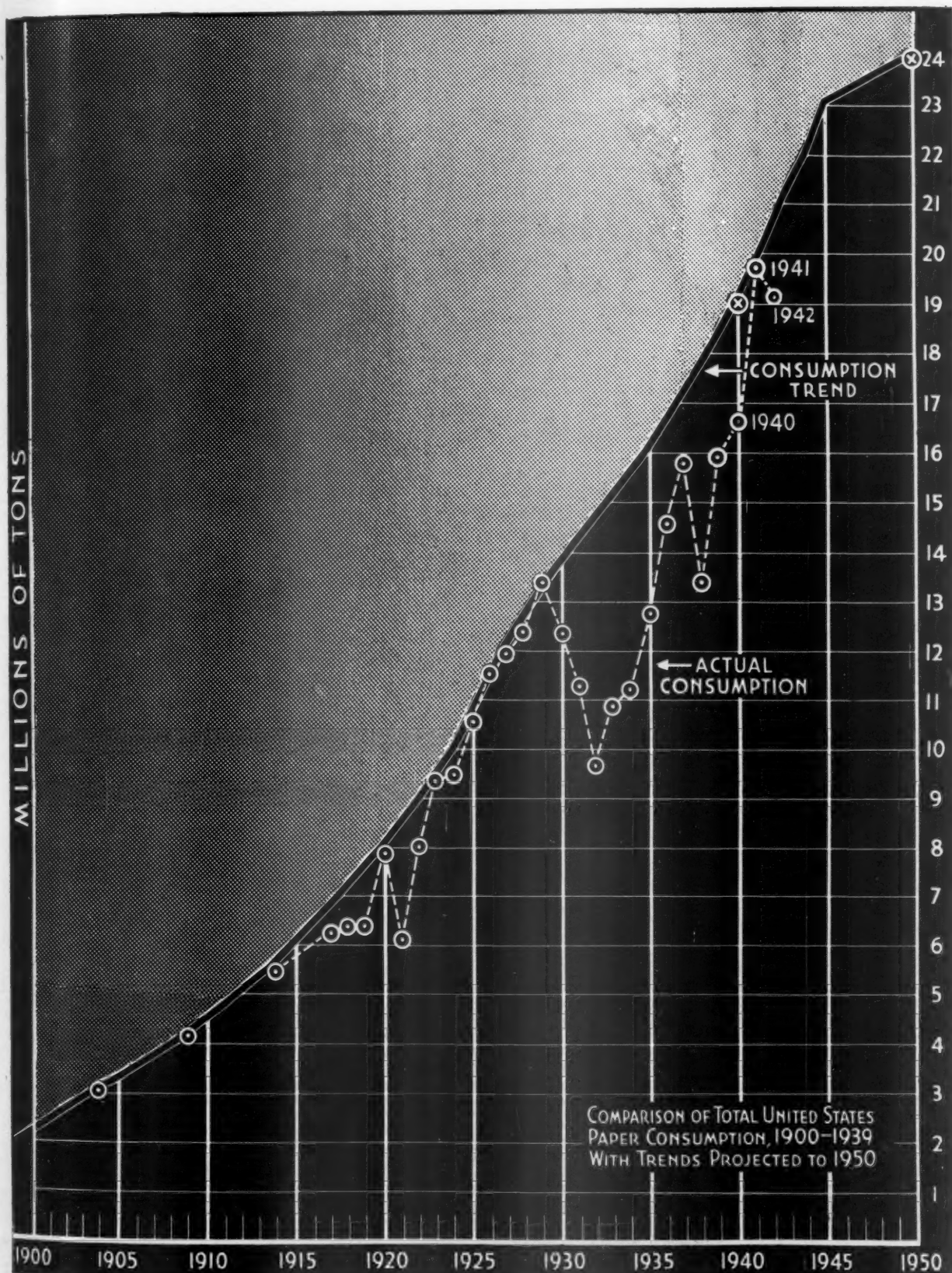
Comparative tonnage records for first quarter periods were: all grades combined, 2,268,000 tons in 1943 and 2,784,000 tons in 1942; all chemical grades, 1,843,000 tons in 1943 and 2,233,000 tons in 1942; mechanical pulp, 425,000 tons in 1943 and 551,000 tons in 1942. (Total production of all grades for the first three months of 1941—a record year until surpassed in 1942—was 2,358,380 tons.)

"Shortage of logs and manpower were the main causes of lower production in the winter months of 1943," Mr. Stevenot stated, "and this led to restrictions now in effect on paper consumption by publishers."

Extremely bad weather in the winter just passed forced suspension of logging in the Pacific Northwest for about two months, instead of the usual two or three weeks, Mr. Stevenot reported. Log inventories shrunk virtually to the vanishing point, causing sharp reduction in pulp production in the region.

"Now that good weather prevails, the concerted and successful efforts are being made in Washington and Oregon to return experienced loggers to the woods," Mr. Stevenot declared, "and it is hoped that equally effective efforts will be made in British Columbia."





**TREND OF PAPER CONSUMPTION** is toward a United States paper consumption of 24,000,000 tons in 1950. This graph is drawn to an arithmetical vertical scale from a ration scale graph prepared in April, 1938, by Charles W. Boyce, then Secretary of the American Paper & Pulp Association. War stimulated consumption brought the 1941 figure up to Mr. Boyce's trend curve. His predicted pace was not maintained, however, in 1942.

# PULP AND PAPER CAPACITIES OF PACIFIC COAST MILLS Showing principal grades manufactured and capacities in tons per 24-hour day

Name of Mill	Location	—PULP—						—PAPER—						REMARKS
		Mechanical	Unbleached Sulphite	Bleached Sulphite	Unbleached Sulphate	Bleached Sulphate	Soda	News	Sulphites	Sulphates	Book	Board	Others	
<b>BRITISH COLUMBIA</b>														
British Columbia Pulp & Paper Co.	Woodfibre			230										{ Bleached sulphite of rayon and paper grades.
British Columbia Pulp & Paper Co.	Port Alice			180										{ News, Kraft and Sulphite Wrapping, fruit wrap, tissues, etc.
Pacific Mills, Ltd.	Ocean Falls	230	90		135			240	47	105			18	{ Newsprint, unbleached sulphite pulp, and groundwood pulp.
(Canadian Subsidiary of Crown Zellerbach Corp.)	Powell River	656	155					720				25		{ Roofing and boards.
Powell River Co., Ltd.	Victoria	10			120									{ Kraft and sulphite wrapping; second sheets; fruit wraps; tissues; specialties.
Sidney Roofing & Paper Co.	Port Mellon								35					
Sorg Pulp Co., Ltd.	New Westminster													
Westminster Paper Co., Ltd.														
<b>WASHINGTON</b>														
Berkheimer Mfg. Co., J. E.	Tacoma	30	140*	110*					120				12	{ Rag roofing, etc.
Columbia River Paper Mills	Vancouver	90												{ Unbleached and bleached sulphite and groundwood papers; wrapping; newsprint; fruit wraps; tissues.
Coos Bay Pulp Corp.	Anacortes													{ Temporarily closed down Nov., 1942.
Crown Willamette Paper Co.	Camas	90	350	150	195	†	60		245	190				{ Sulphite, sulphate and groundwood specialties, tissue, M. F. book, etc.
(Division of Crown Zellerbach Corp.)	Everett										70			{ Book, railroad, writing, school supplies (10 tons de-inked pulp)
Everett Pulp & Paper Co.	West Tacoma										(25)			{ Products same as Everett mill (idle).
Everett Pulp & Paper Co.	Port Angeles	25	65									65		{ Box and container board, pulp board.
Fibreboard Products Inc.	Sumner											75		{ White patent coated board, bottle cap bd.
Fibreboard Products Inc.	Hoquiam								68					{ Box and container board, coated board.
Grays Harbor Pulp & Paper Co.	Millwood	90	33						40					{ Sulphite bonds, writing, specialties.
Inland Empire Paper Co.	Longview	100			350	†		68		210		230		{ News, wrapping, poster, sulphite specialties, etc.
Longview Fibre Co.	Port Townsend				295					170		120		{ Board, wrapping, bags, container, boxes.
National Paper Products Co.	Bellingham								22					{ Kraft liner board, wrapping, bag paper.
(Division of Crown Zellerbach Corp.)	Longview	30	480									80		{ Toilet Tissues, Towels, etc.
Pacific Paperboard Co.	Bellingham													{ All kinds of boards.
Puget Sound Pulp & Timber Co.	Hoquiam													{ Rayon and paper grades.
Rayonier Inc., Grays Harbor Division	Port Angeles													{ Rayon and paper grades.
Rayonier Inc., Port Angeles Division	Shelton													{ All Rayon grade.
Rayonier Inc., Shelton Division††	Tacoma													{ Bleaching capacity 250 tons daily.
St. Regis Paper Co.	Everett													{ Temporarily closed down Nov., 1942.
(Kraft Pulp Division)	Port Angeles	310	60					355						{ Newsprint.
Soundview Pulp Co.	Everett													
Washington Pulp & Paper Corporation	Longview													
(Division of Crown Zellerbach Corp.)														
Weyerhaeuser Timber Co.														
(Pulp Division)														
Weyerhaeuser Timber Co.														
(Pulp Division)														





## 1942 Was Year of Restriction And Regimentation--For Victory

**A**NNO 1942 will go down in the history of the pulp and paper industry of North America as the year of restriction and regimentation—a year of belt-tightening and falling in step in order that the United States and Canada and other United Nations might wage a victorious war at the highest possible peak of efficiency. This was especially true for the Pacific Coast industry.

It all wasn't smooth and efficient, however. That could hardly have been expected. We were inexperienced in the science of total war. And we Americans still enjoy our politics—even in bitter doses.

Anno 1942 also was a year in which wood pulp production for the United States and Canada combined broke all past records. It was the fourth successive record-breaking year for the United States, with three tons manufactured to every two tons produced in 1939.

But Canada alone showed a slight decline. So did the Pacific Coast states, despite the heavy emphasis

put on the high grade pulp used for actual fighting materials, such as gun cotton and other explosives. Almost the only suitable pulp for this purpose was manufactured on the Pacific Coast and it became a prime wartime product of this region. Yet there was an overall decrease in Pacific Coast production of all kinds of pulp and paper due almost wholly to loss of manpower in the woods.

The pulp and paper industry gladly made sacrifices in the urgent cause of war in a year which began under the dark shadows of Bataan, Singapore, the Japanese air and sea control of the West Pacific and the German advance to the Volga. There was no relaxing of the industry's war effort when the year ended with brightening skies—illuminated by American victories in the South Seas, the Russian triumph at Stalingrad and the dramatic landings in North Africa.

The pulp and paper industry concentrated brains, skill and physical

resources in development of war uses for pulp and paper. Vitrally important products of paper, paper-board and plastics made of wood pulp not only became substitutes for wood, glass, rubber, foil, tin and other metals. Some proved superior to the originals and hold great promise for production after the war.

The production of essential nitrating pulp for gun cotton and other explosives was increased tremendously. Production of pulp for rayon, needed for tires and other wartime equipment, was stepped up with Pacific Coast mills leading the way. More pulp and paper was diverted to lend-lease orders and to South America.

Despite new all-time high production of pulp and paper in some west coast mills as well as elsewhere generally in the United States, profits took a downward dip in almost every company. This was due to restrictive price ceilings, increased labor and other costs and increased

### UNITED STATES

Paper and Woodpulp Production and Consumption  
Consumption of Domestic and Imported Pulpwood and Total Pulpwood Consumption  
Specified Years, 1899-1942

Year—	PAPER		WOODPULP		CONSUMPTION OF PULPWOOD		
	Production (tons)	Consumption (tons)	Production (tons)	Consumption (tons)	Domestic (cords)	Imported (cords)	Total (cords)
1899.....	2,167,593	2,158,000	1,179,525	1,216,254	1,617,093	369,217	1,986,310
1904.....	3,106,696	3,049,824	1,921,768	2,091,006	2,477,099	573,618	3,050,717
1909.....	4,216,708	4,224,000	2,495,523	2,856,593	3,207,653	793,954	4,001,607
1914.....	5,270,047	5,496,164	2,893,150	3,556,377	3,641,063	829,700	4,470,763
1917.....	5,919,647	6,255,725	3,509,939	4,148,600	4,706,327	773,748	5,480,075
1918.....	6,051,523	6,387,066	3,313,861	3,869,746	4,506,276	744,518	5,250,794
1919.....	6,190,361	6,479,490	3,517,952	4,113,911	4,445,817	1,032,015	5,477,832
1920.....	7,334,614	7,846,827	3,821,704	4,696,035	5,014,513	1,099,559	6,114,072
1921.....	5,356,317	6,053,915	2,875,601	3,544,218	3,740,406	816,773	4,557,179
1922.....	7,017,800	8,007,088	3,521,644	4,756,105	4,498,808	1,050,034	5,548,842
1923.....	8,029,482	9,339,573	3,788,672	5,149,695	4,636,789	1,236,081	5,872,870
1924.....	.....	.....	3,723,266	5,216,265	4,720,191	1,047,891	5,768,082
1925.....	9,182,204	10,590,090	3,962,217	5,590,304	5,005,445	1,088,376	6,093,821
1926.....	.....	.....	4,394,766	6,096,279	5,489,517	1,276,490	6,766,007
1927.....	10,002,070	11,915,233	4,313,403	5,960,865	5,526,889	1,224,046	6,750,935
1928.....	10,403,338	12,447,841	4,510,800	6,239,641	5,750,689	1,409,411	7,160,100
1929.....	11,140,235	13,347,925	4,862,885	6,704,341	6,411,566	1,233,445	7,645,011
1930.....	10,169,140	12,314,819	4,630,308	6,463,185	6,089,852	1,105,672	7,195,524
1931.....	9,381,840	11,403,850	4,409,344	6,005,718	5,896,446	826,320	6,722,766
1932.....	7,997,872	9,733,764	3,760,267	5,083,446	4,891,424	741,699	5,633,123
1933.....	9,190,017	10,919,391	4,293,344	6,027,088	5,933,295	628,379	6,561,674
1934.....	9,186,266	11,185,682	4,281,428	5,969,633	5,822,681	973,978	6,796,659
1935.....	10,506,195	12,490,886	4,944,226	6,877,869	6,590,942	1,037,332	7,628,274
1936.....	11,670,000	14,546,046	5,695,219	7,420,829	7,506,156	1,209,760	8,715,916
1937.....	12,600,000	15,798,362	6,617,184	8,692,489	8,870,932	1,522,868	10,393,800
1938.....	11,327,000	13,488,300	5,933,060	7,975,000	7,900,053	1,293,938	9,193,991
1939.....	13,509,642	15,930,349	6,993,334	9,058,415	9,685,592	1,130,874	10,816,466
1940.....	14,483,709	16,620,632	8,851,740	9,724,643	12,564,180	1,435,820	13,742,958
1941.....	17,304,143	19,792,468	9,978,400	10,801,223	15,400,000	1,292,640*	16,692,640
1942.....	16,522,000	19,022,000	10,233,000	11,050,000	15,972,000	**	**

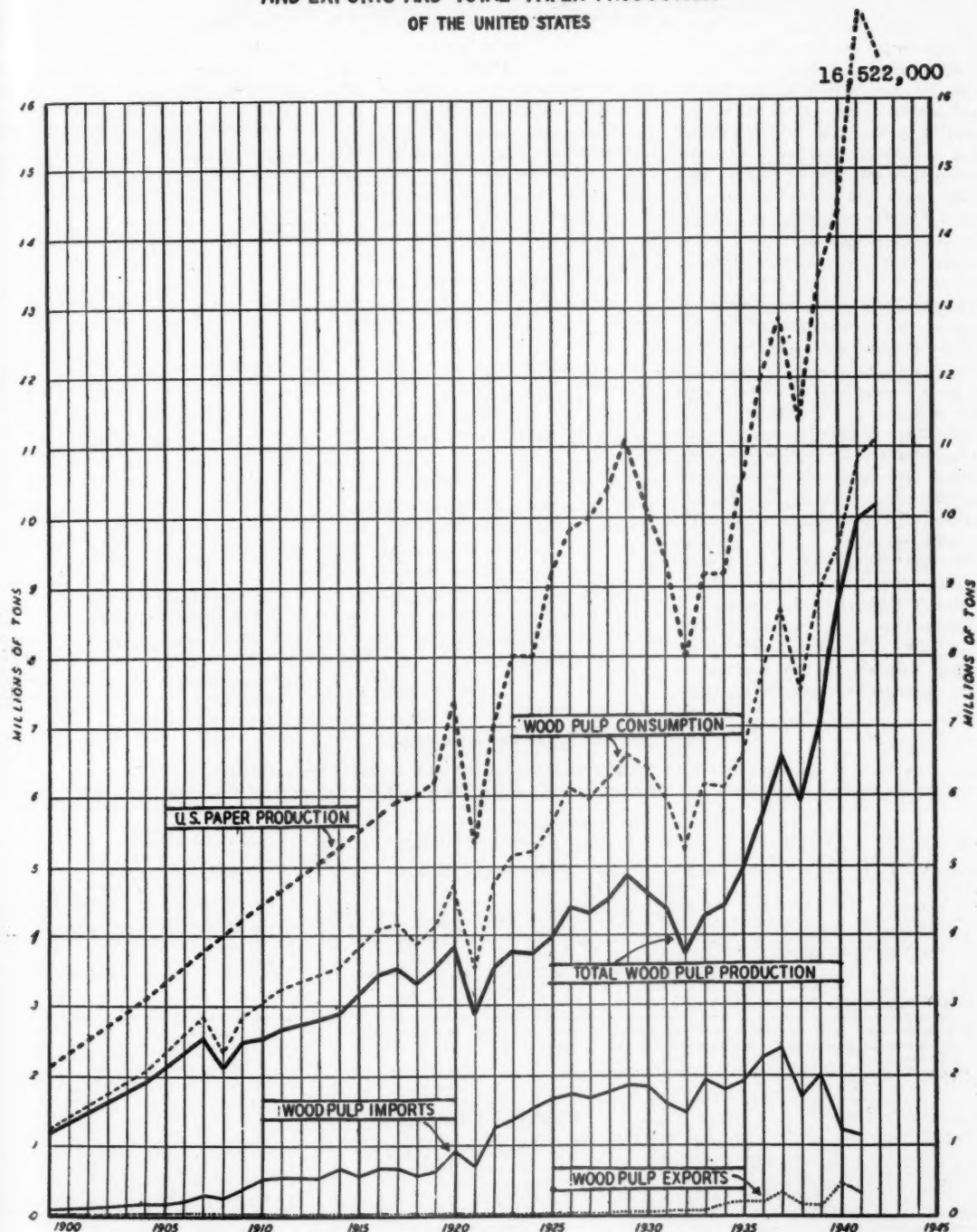
Source: Bureau of the Census, United States Forest Service and A. P. & P. A. Bureau Foreign and Domestic Commerce, U. S. Pulp Producers Association.

\*Pulpwood requirement is a computed figure which represents the pulpwood required to manufacture the total paper consumption of a year.

†Available for nine months of 1941 only. Other 1941 figures estimated for 12 months.

\*\*Due to war measure, figures not available for 1942.

**TOTAL WOOD PULP PRODUCTION, CONSUMPTION, IMPORTS  
AND EXPORTS AND TOTAL PAPER PRODUCTION  
OF THE UNITED STATES**



Sources for Paper Production—U. S. Bureau of the Census except 1924, 1926 and 1942 estimated by American Paper & Pulp Association. For Pulp Production—1899-1940 U. S. Bureau of the Census. 1942 estimated by U. S. Pulp Producers Association. Imports and Exports—U. S. Bureau of Foreign & Domestic Commerce. 1942 estimated by USPPA.

United States Pulp Producers Association.

taxes.

According to revised figures of April 8, issued by the U. S. Pulp Producers Association, the pulp production for the United States was

10,227,720 tons for 1942 (short tons of 2,000 lbs. air dry weight) as compared with 9,978,090 in 1941, as shown in tables published with this article.

(The small one-column wide drawings comparing pulp production, consumption, capacity, etc., appearing on these pages and also furnished by the USPPA will be seen to

have slightly different figures. That is because they were based on preliminary estimates for 1942 made in February, 1943. The differences are so slight they would make no noticeable difference in the sizes of rectangles in the drawings.)

The pulp production of the Pacific Coast states of the United States, according to the USPPA's April revision, was 1,968,658 tons as compared with 1,994,150 in 1941. The similar slight Canadian decline was from 5,720,847 to about 5,515,000 tons. British Columbia production declined from 494,811 to 448,272 tons.

Such heavy wartime demands are being made on manpower, timber supply, electric energy and transportation that it is almost a certainty that pulp production in the United States will show a decline for 1943, for the first time since 1938. In Southern States, loss of negro labor to other industries and shortage of tires where log hauls of 50 miles are common were bound to cut heavily into production.

The end of restriction and regimentation had not been reached by the end of 1942 by any means. It probably won't be reached by the end of 1943. But more experienced wartime officials and agencies in Washington and Ottawa were chang-

## UNITED STATES PULP INDUSTRY

(Charts by United States Pulp Producers Association. The 1942 figures were preliminary estimates, only slightly revised at later date).

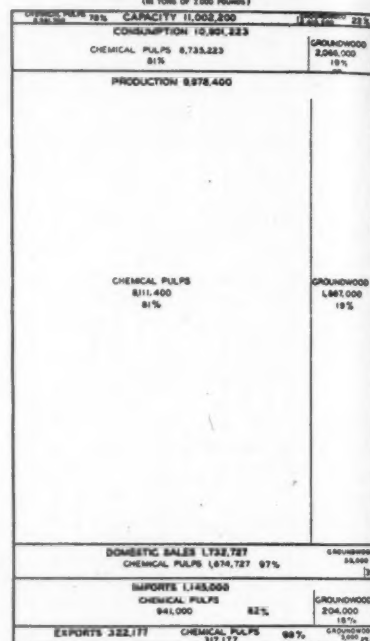
1942

TOTAL WOOD PULP, ALL GRADES  
(IN TONS OF 2,000 POUNDS)



1941

TOTAL WOOD PULP, ALL GRADES  
(IN TONS OF 2,000 POUNDS)



## UNITED STATES WOOD PULP PRODUCTION BY REGIONS—1942 (Tons of 2,000 Pounds)

Region	Total All Grades	Total Sulphite	Bleached Sulphite	Unbleached Sulphite	Total Sulphate	Bleached Sulphate	Unbleached Sulphate	Ground-wood	Soda	Semi-Chemical†
West Coast	1,968,658	1,194,868	632,510	562,358	432,896	68,634	364,262	300,174	*	40,720
New England	1,419,514	652,854	421,538	231,316	95,130*	58,018	37,112	636,589	127,559	2,512
Middle Atlantic	857,744	298,392	157,462	140,930	*	0	*	306,185	153,611	4,426
Lake States	1,434,532	650,532	373,112	277,420	300,958	44,955	256,003	422,977	57,145**	2,920
South	4,543,879	133,900	133,570	330	3,896,149	639,994	3,256,155	223,682	115,144	175,004
Totals	10,224,327	2,930,546	1,718,192	1,212,354	4,725,133	811,601	3,913,532	1,889,607	453,459	225,582

†Includes screenings.

\*Unbleached sulphate produced in New England combined with Middle Atlantic production to avoid disclosing one company's data.

\*\*Soda produced on Pacific Coast combined with Lake States production to avoid disclosing one company's data.

Total Groundwood screenings produced during 1942 amounted to 3,393 tons. Production by regions as follows: New England 2,924 tons; Lake States 469 tons.

Source: As reported to the United States Pulp Producers Association.

## UNITED STATES WOOD PULP PRODUCTION BY REGIONS—1941 (Tons of 2,000 Pounds)

Region	Total All Grades	Total Sulphite	Bleached Sulphite	Unbleached Sulphite	Total Sulphate	Bleached Sulphate	Unbleached Sulphate	Ground-wood	Soda	Semi-Chemical
West Coast	1,994,150	1,198,172	611,337	586,835	433,117	96,668	336,449	324,556	**	35,606
New England	1,461,000	639,849	396,207	243,642	27,083	0	27,803	652,509	138,413	0
Middle Atlantic	774,197	254,274	98,923	155,351	*	0	*	305,467	210,601	3,855
Lake States	1,482,353	681,849	474,032	207,817	315,596	69,437	246,159	407,660	70,507	1,443
South	4,266,290	122,856	122,801	55	3,611,762	521,477	3,090,285	171,791	195,158	163,096
Totals	9,978,090	2,897,000	1,703,300	1,193,700	4,387,558	687,582	3,699,976	1,861,983	614,679	204,000

\*Included in New England's total to avoid disclosing one company's data.

\*\*Included in Lake States' total to avoid disclosing one company's data.

Source: As reported to the United States Pulp Producers Association and the Soda Pulp Manufacturers Association by 98 per cent of the industry and estimated for the remaining 2 per cent.

Total screenings produced during 1941 amounted to 12,870 tons. Production by regions as follows: New England, 3,246 tons; Lake States, 5,298 tons; West Coast, 2,699 tons and South, 1,627 tons and are included in the totals.



ing their thinking from the line that most pulp and paper wouldn't be missed and that wholesale curbs on the industry could be instituted without hurting the war effort. Those who held such views were mostly relegated back to the sidelines by the end of 1942. By then the line of thought was that the pulp and paper industry should be allowed to produce the maximum with what it has left available in manpower and materials.

### More Cuts Inevitable

There were bound to be more cuts in certain lines of production but it was hoped that they would be made carefully with due consideration of possible far-reaching consequences, not only to the war effort but to post-war prosperity.

There were several price actions taken by OPA during the year 1942. One of importance to the west coast industry was the establishment of maximum prices for wood pulp on April 14 through issuance of Maximum Price Regulation 114.

The consensus of operators on the Pacific Coast appeared to be that the Office of Price Administration had been fair to the industry. Its price ceilings were difficult in view of rising costs but they tended to

stabilize conditions in the industry. In most cases, they were adjudged well administered. Pacific Coast operators were gratified because the old system of an Atlantic seaboard price was abandoned. This had been based on the pre-war competition with Sweden and was unfair to the West Coast mills whose deliveries were not to Atlantic ports but to mills hundreds and thousands of miles in the interior. The OPA, with its price scale based f.o.b. converting mill or delivered point, was credited not only with setting fair prices but fair standards for the industry. The new standards set for prime bleached sulphite were especially welcomed on the Pacific Coast.

### Wood Pulp Allocation

One of the most important control orders of WPB for the industry in the United States is M-93, the wood pulp allocation order which became effective May 1, 1942. Under this system, no deliveries of pulp were thereafter permissible except by specific authority of WPB. The order is designed to conserve supplies and distribute pulp equitably.

The machinery for working this out and its actual operation present one of the finest wartime examples of team work between industry and officialdom.

It was a tremendously important order to the Pacific Coast because most of the pulp for commercial use is made in this section of the country.

An important modification of this order has been made just recently. On May 5 of this year all producers of wood pulp were ordered by the WPB to withhold 20 per cent of their production of all types of wood pulp during the month of June and each month thereafter, and to make deliveries of such withheld tonnage only as ordered by WPB. This action became necessary because of developing shortages and in order to assure adequate paper and paperboard for wartime uses.

The various manpower agencies, however, did not always appear to be as fair to mill operators, especially in the eastern states. In Washington and Oregon states, the industry fared better as various manpower directors joined in a proclamation that the industry was essential. But among individuals, various boards and other agencies, there was much blowing hot and cold on the question. This led to repeated alarms and confusing situations.

Late in the year, the War Manpower Commission in Washington, D. C., finally issued as an advisory document for Selective Service

## UNITED STATES PULP INDUSTRY — 1942

(These charts were prepared by the United States Pulp Producers Association. They are preliminary estimates made in February, 1943, only slightly revised at later date. Consumption figures indicate apparent consumption, based on production plus imports minus exports).

TOTAL SULPHITE PULP  
(IN TONS OF 2,000 POUNDS)

CONSUMPTION 3,513,781	
BLEACHED 1,983,342 56%	UNBLEACHED 1,530,439 44%
CAPACITY 3,189,150	
BLEACHED 1,975,180 59%	UNBLEACHED 1,314,000 41%
PRODUCTION 2,932,166	
BLEACHED 1,722,876 59%	UNBLEACHED 1,209,290 41%
DOMESTIC SALES 1,197,091	
BLEACHED 837,681 70%	UNBLEACHED 359,410 30%
IMPORTS 800,000	
BLEACHED 370,000 46%	UNBLEACHED 430,000 54%
EXPORTS 218,385	
BLEACHED 105,334 50%	UNBLEACHED 108,051 50%

TOTAL SULPHATE PULP  
(IN TONS OF 2,000 POUNDS)

CAPACITY 5,075,600	
BLEACHED 883,000 17%	UNBLEACHED 4,192,600 83%
PRODUCTION 4,729,252	
BLEACHED 81,252 17%	UNBLEACHED 4,648,000 83%
CONSUMPTION 4,723,837	
BLEACHED 841,980 18%	UNBLEACHED 3,881,857 82%
DOMESTIC SALES 365,354	
BLEACHED 17,433 5%	UNBLEACHED 247,921 67%
EXPORTS 182,415	
BLEACHED 82,000 45%	UNBLEACHED 100,415 55%
IMPORTS 157,000	
BLEACHED 82,000 52%	UNBLEACHED 75,000 48%

GROUNDWOOD PULP  
(IN TONS OF 2,000 POUNDS)

CAPACITY 2,429,450	
CONSUMPTION 1,108,000	
PRODUCTION 1,893,000	
IMPORTS 212,000	
DOMESTIC SALES 47,000	

## UNITED STATES PULP INDUSTRY — 1942

(These charts were prepared by the United States Pulp Producers Association. They are preliminary estimates made in February, 1943, only slightly revised at later date. Consumption figures indicate apparent consumption, based on production plus imports minus exports).

## BLEACHED SULPHITE PULP

(in tons of 2,000 pounds)

CONSUMPTION 1,983,342	DISSOLVING 483,820 25%
PAPER GRADES 1,518,522 77%	
CAPACITY* 1,875,180	
PRODUCTION 1,722,876	
PAPER GRADES 1,381,554 79%	DISSOLVING 341,322 21%
DOMESTIC SALES 837,631	DISSOLVING 347,494 41%
PAPER GRADES 490,137 59%	
IMPORTS 370,000	DISSOLVING 119,000 31%
PAPER GRADES 355,000 97%	
EXPORTS 108,551	DISSOLVING 8346 8%
PAPER GRADES 97,032 89%	

\*133,950 Tons additional bleaching capacity utilized for Unbleached Sulphite

## UNBLEACHED SULPHITE PULP

(in tons of 2,000 pounds)

CONSUMPTION 1,550,439
CAPACITY 1,314,000
PRODUCTION 1,208,290
IMPORTS 430,000
DOMESTIC SALES 358,460
EXPORTS 108,851

## PAPER GRADES - BLEACHED SULPHITE PULP

(in tons of 2,000 pounds)

CONSUMPTION 1,518,522	CAPACITY 1,513,828
PRODUCTION 1,381,554	
DOMESTIC SALES 490,137	
IMPORTS 255,000	
EXPORTS 97,032	

## BLEACHED SULPHATE PULP

(in tons of 2,000 pounds)

CAPACITY* 865,000
CONSUMPTION 847,860
PRODUCTION 81,233
DOMESTIC SALES 78,422
IMPORTS 32,000
EXPORTS 21,433

\*200,000 Tons additional bleaching capacity utilized for Unbleached Sulphate

## UNBLEACHED SULPHATE PULP

(in tons of 2,000 pounds)

(IN TONS OF 2,200 POUNDS)	
CAPACITY 4,310,600	
PRODUCTION 3,917,959	CONSUMPTION 3,881,977

## SODA PULP

(in tons of 2,000 pounds)

CAPACITY 520,100
CONSUMPTION 470,000
PRODUCTION 453,000
DOMESTIC SALES 98,728
IMPORTS 18,000
EXPORTS 2,000

boards, a list of 35 essential industries. One of these embraced paper and paper-making for packaging purposes. Under the headings of communications and munitions, other pulps and papers could

be embraced. But it was a question left to interpretation by the local boards. More recently the WMC issued this same list of essential activities to U. S. Employment Service officers and all manpower agencies

in an effort to curb a dangerous drift of manpower from pulp and paper mills and other established industries to seemingly more attractive war industries.

# TOTAL UNITED STATES PRODUCTION OF WOOD PULP By Grades — 1925-1942

(Tons of 2000 pounds)

Year.	Total	Unbleached Sulphite	Bleached Sulphite	Total Sulphate	Groundwood	Soda	All Other
1925	3,962,217	790,510	612,576	409,768	1,612,019	472,647	64,697
1926	4,394,766	911,729	646,466	519,960	1,764,248	496,920	55,463
1927	4,313,403	872,411	680,288	603,253	1,610,409	487,478	59,564
1928	4,510,800	836,751	722,107	774,225	1,610,988	488,641	78,088
1929	4,862,885	848,754	839,953	910,888	1,637,653	520,729	104,908
1930	4,630,308	815,897	751,166	949,513	1,560,221	474,230	79,281
1931	4,409,344	675,859	740,812	1,034,291	1,449,240	374,054	135,088
1932	3,760,267	548,702	596,937	1,028,846	1,203,044	290,703	92,035
1933	4,276,204	601,102	726,473	1,259,351	1,197,553	457,790	33,935
1934	4,281,428	599,905	806,612	1,240,967	1,253,398	477,089	35,457
1935	5,032,299	634,947	944,620	1,467,749	1,355,819	485,162	144,002
1936	5,695,219	693,903	1,127,039	1,794,734	1,475,620	557,695	46,228
1937	6,713,576	791,575	<sup>1</sup> 1,348,669	2,139,087	1,600,667	507,548	326,030
1938	5,933,560	601,855	<sup>2</sup> 1,004,621	2,443,057	1,333,308	395,307	155,418
1939	6,993,334	729,203	<sup>3</sup> 1,217,249	2,962,657	1,444,875	441,565	357,929
1940	8,851,740	990,668	<sup>4</sup> 1,601,016	3,725,135	1,762,821	548,047	164,940
1941	10,200,726	1,215,649	1,703,131	4,394,338	1,925,284	617,012	345,312
1942	10,233,000	1,209,290	1,722,876	4,729,252	1,893,000	453,000	215,582

<sup>1</sup>For 1937: "Superpurified" and "Rayon and special grades" combined amounted to 353,640 tons.<sup>2</sup>For 1938: "Superpurified" and "Rayon and special grades" combined amounted to 228,261 tons.<sup>3</sup>For 1939: "Superpurified" and "Rayon and special grades" combined amounted to 193,420 tons.<sup>4</sup>Includes "Superpurified" and "Rayon and special grades" to avoid disclosing figures for individual establishments for 1940.

Source: From 1925 through 1933 and for 1935 through 1941, U. S. Census. 1934 and 1942 data from United States Pulp Producers Association. 1942 figures are estimates by United States Pulp Producers Association.

## REGIONAL PERCENTAGES OF UNITED STATES WOOD PULP PRODUCTION Total and by Grades in 1940, 1941 and 1942

Region	Sulphite			Sulphate			Groundwood			Soda			Total		
	1940	1941	1942	1940	1941	1942	1940	1941	1942	1940	1941	1942	1940	1941	1942
New England	21	22	22	*	*	*	33	35	34	22	22.5	28	14.5	14.5	14
Middle Atlantic	9	9	10	*	.5	2.5	14	16.5	16	34	34	34	8	8	8
Lake States	23	24	22	7.5	7	6.5	19	22	22	13	11.5	13**	14.5	14.5	14
South	4.5	4	5	83	82.5	82	17	9	12	31	32	25	43	43	45
West Coast	42.5	41	41	9.5	10	9	17	17.5	16	*	*	**	20	20	19
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

1940: As reported to United States Pulp Producers Association by 90 per cent of the industry and estimated for the remaining 10 per cent.

1941: Estimated for 100 per cent of the industry by United States Pulp Producers Association.

\*Included in Lake States' total so as not to disclose individual mills' figures.

1942: Estimated for 100 per cent of the industry by United States Pulp Producers Association.

\*Unbleached sulphate produced in New England combined with Middle Atlantic production to avoid disclosing one company's data.

\*\*Soda produced on West Coast combined with Lake States production to avoid disclosing one company's data.

## SUMMARY FOR 1942 OF UNITED STATES WOOD PULP PRODUCTION, SHIPMENTS and STOCKS

Tons of 2,000 lbs., air dry weight

	Production	Used	Shipments		Stocks on Hand	
			Domestic Market	Export	End of Period	
					12/31/42	1/1/42
Total All Grades, 1942.....	10,227,720	121,285	1,731,599	379,814	22,698	94,609
Total Sulphite .....	2,930,546	18,702	1,209,310	214,807	20,261	36,064
Total Bleached Sulphite .....	1,718,192	7,656	841,778	104,098	13,726	21,612
Total Unbleached Sulphite .....	1,212,354	11,046	367,541	110,709	6,535	14,452
Total Bleached Sulphate .....	811,601	7,499	76,472	21,433	1,456	4,378
Total Unbleached Sulphate .....	3,913,532	49,784	293,322	141,374	466	9,553
Total Soda .....	453,459	3,529	98,857	2,000	0	2,949
Semi-Chemical .....	211,747	153	3	0	0	83
Chemical Screenings .....	13,835	1,560	6,626	200	181	692
Groundwood .....	1,889,607	39,290	46,898	0	334	40,640
Groundwood Screenings .....	3,393	768	102	0	0	250

Source: United States Pulp Producers Association.



## SUMMARY FOR 1941 OF UNITED STATES WOOD PULP PRODUCTION, SHIPMENTS and STOCKS

Tons of 2,000 lbs., air dry weight.

	Production	Used	Shipments		Stocks on Hand	
			Domestic Market	Export**	End of Period 12/31/41	1/1/41
Total All Grades, 1941.....	9,978,090	8,040,305	1,723,584	306,095	94,609	188,466
Total Sulphite.....	2,897,000	1,558,411	1,228,530	156,756	36,064	82,761
Total Bleached Sulphite.....	1,703,300	865,666	767,970	97,633	21,612	49,581
Rayon.....	214,767	1,684	196,564	27,505	4,405	15,391
Other.....	1,488,533	863,982	571,406	70,128	17,207	34,190
Total Unbleached Sulphite.....	1,193,700	692,745	460,560	59,123	14,452	33,180
Total Bleached Sulphate.....	687,582	604,111	72,968	10,377	4,378	4,252
Total Unbleached Sulphate.....	3,699,976	3,355,903	246,373	132,162	9,553	44,015
Total Soda.....	614,679	506,682	111,200	1,800	2,949	8,460
Semi-Chemical.....	204,000	203,921	0	0	83	4
Chemical Screenings.....	10,870	4,475	6,513	0	692	810
Groundwood.....	1,861,983	1,804,643	57,862	5,000	40,640	47,717
Groundwood Screenings.....	2,000	2,059	138	0	250	447

\*Covers only pulp manufactured by producing mills or transferred to their subsidiaries. Does not include purchased pulp.

\*\*Covers only shipments made for export during 1941 as reported by the producing mills. Does not include exports that may have been made from stocks of purchased pulp held by agents.

Source: As reported to the United States Pulp Producers Association and the Soda Pulp Manufacturers Association by 98 per cent of the industry and estimated for remaining 2 per cent.

UNITED STATES  
WOOD PULP PRODUCING CAPACITY BY REGIONS

1943

(In tons of 2,000 pounds)

Grade—	New England	Middle Atlantic	Lake States	Pacific	South	Total
Sulphite:						
Bleached*.....	464,950	184,470	420,690	721,560	142,900	1,934,570
Unbleached.....	260,775	159,960	289,560	584,090	0	1,294,385
Total.....	725,725	344,430	710,250	1,305,650	142,900	3,228,955
Sulphate:						
Bleached.....	0	67,500	68,700	116,740	720,120	973,060
Unbleached.....	31,770	7,400	275,420	362,480	3,628,425	4,306,495
Total.....	31,770	75,900	344,120	479,220	4,348,545	5,279,555
Soda.....	141,000	166,910	51,700	11,440	122,010	493,060
Semi-Chemical.....	0	0	1,050	35,080	211,890	248,020
Groundwood.....	811,505	485,835	551,910	376,520	252,455	2,478,225
TOTAL.....	1,710,000	1,073,075	1,659,030	2,207,910	5,077,800	11,727,815

\*In addition to the bleached capacity shown above, the mills had facilities for bleaching 164,000 tons more sulphite pulp and 308,000 tons more sulphate pulp. It is estimated that this capacity will be utilized during 1943 to produce unbleached grades and is therefore shown as unbleached capacity.

Source: United States Pulp Producers Association.

1942

Grade—	New England	Middle Atlantic	Lake States	Pacific	South	Total
Sulphite—						
Bleached*.....	434,100	176,900	394,200	677,400	134,000	1,816,600
Unbleached.....	272,720	192,900	285,350	621,580	0	1,372,550
Total.....	706,820	369,800	679,550	1,298,980	134,000	3,189,150
Sulphate—						
Bleached*.....	0	67,500	55,000	76,500	651,550	850,550
Unbleached.....	31,000	7,000	280,550	393,655	3,529,845	4,252,050
Total.....	31,000	74,500	335,550	470,155	4,181,395	5,092,600
Soda.....	143,310	164,930	54,580	8,000	121,280	492,000
Semi-Chemical.....	0	5,000	1,700	43,200	196,700	246,600
Groundwood.....	804,500	508,750	555,300	385,200	245,700	2,499,450
TOTAL.....	1,685,630	1,122,980	1,626,580	2,205,535	4,879,075	11,519,800

\*In addition to the bleached capacity shown above, the mills had facilities for bleaching 190,300 tons more sulphite pulp and 214,150 tons more sulphate pulp, which capacity was used during 1942 to produce unbleached grades and is therefore shown as unbleached capacity.

Source: United States Pulp Producers Association.

# UNITED STATES WOOD PULP PRODUCTION, CONSUMPTION, IMPORTS, EXPORTS 1942

(In tons of 2,000 pounds)

Grade—	Consumption <sup>1</sup>	Production	Imports	Exports
Sulphite:				
Bleached .....	1,983,342	1,722,876	370,000	109,534
Unbleached .....	1,530,439	1,209,290	430,000	108,851
<b>Total</b> .....	<b>3,513,781</b>	<b>2,932,166</b>	<b>800,000</b>	<b>218,385</b>
Sulphate:				
Bleached .....	841,860	811,293	52,000	21,433
Unbleached .....	3,881,977	3,917,959	105,000	140,982
<b>Total</b> .....	<b>4,723,837</b>	<b>4,729,252</b>	<b>157,000</b>	<b>162,415</b>
Soda .....	470,000	453,000	19,000	2,000
Groundwood .....	2,105,000	1,893,000	212,000	—
<b>TOTAL</b> .....	<b>10,812,618</b>	<b>10,007,418</b>	<b>1,188,000</b>	<b>382,800</b>

Source: United States Pulp Producers Association.

<sup>1</sup>Estimated on the basis that consumption equals production and imports, minus exports.

1942 figures estimated by United States Pulp Producers Association as figures from the U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce, are not available due to war measure.

## 1941

Grade—	Consumption <sup>1</sup>	Production <sup>2</sup>	Imports <sup>2</sup>	Exports <sup>2</sup>
Sulphite:				
Bleached .....	1,980,300	1,703,300	389,000	112,000
Unbleached .....	1,476,700	1,193,700	351,000	68,000
<b>Total</b> .....	<b>3,457,000</b>	<b>2,897,000</b>	<b>740,000</b>	<b>180,000</b>
Sulphate:				
Bleached .....	737,460	687,837	60,000	10,377
Unbleached .....	3,691,000	3,700,000	116,000	125,000
<b>Total</b> .....	<b>4,428,460</b>	<b>4,387,837</b>	<b>176,000</b>	<b>135,377</b>
Soda .....	624,500	609,300	17,000	1,800
Special and Off Quality .....	—	—	—	—
Groundwood .....	2,066,000	1,867,000	204,000	5,000
<b>TOTAL</b> .....	<b>10,575,960</b>	<b>9,761,137</b>	<b>1,137,000</b>	<b>322,177</b>

Source: United States Pulp Producers Association.

<sup>1</sup>Estimated on the basis that consumption equals production and imports, minus exports.

<sup>2</sup>Estimated for 100 per cent of the industry by the United States Pulp Producers Association.

Imports and exports estimated for 1941 by United States Pulp Producers Association as figures for the entire year were not available from the U.S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

## STOCKS OF WOOD PULP OF OWN PRODUCTION

Held by United States Wood Pulp Producers

(Does not include purchased pulp)

	January 1, 1942		December 31, 1942	
	For Own Use	For Market	For Own Use	For Market
Total All Grades .....	78,344	18,228	121,285	22,698
Total Sulphite .....	18,730	17,334	18,702	20,261
Bleached Sulphite .....	8,280	13,332	7,656	13,726
Unbleached Sulphite .....	10,450	4,002	11,046	6,535
Total Bleached Sulphate .....	4,378	0	7,499	1,456
Total Unbleached Sulphate .....	9,383	170	49,784	466
Total Soda .....	3,357	0	3,529	0
Semi-Chemical .....	83	0	153	0
Chemical Screenings .....	663	29	1,560	181
Groundwood .....	41,500	695	39,290	334
Groundwood Screenings .....	250	0	768	0

Source: As reported to the United States Pulp Producers Association.

## Highlights of Year For Pacific Coast Industry

THE year 1942 was one of the most eventful in the entire history of the Pacific Coast pulp and paper industry. The stresses of war brought developments that jarred and jolted the industry to its very foundations. If it were not for its innately healthy condition and sturdy constitution, the Pacific Coast industry might have suffered considerable irreparable damage.

Fortunately, the west coast industry has a vitality that is unsurpassed in any other part of the world. Even more fortunate, it may be said, is the fact that the kind of pulp and paper products now manufactured on the Pacific Coast have particular usefulness in wartime.

The big headache of the year on the Coast—not only for pulp and paper—but for all other essential war industries—was the lack of manpower. The sparsely populated character of this region as war industries mushroomed up and down the coast, and the heavy demand

for fighting men, were chiefly responsible for this shortage.

The lack of manpower was the seed cause of all other prime problems which the pulp and paper industry had to wrestle with during the year. It brought mill shutdowns, log allocations, a ban on eastward paper pulp shipments and a Canadian log export embargo.

The shutdown of three mills on Puget Sound and the embargo on shipment of British Columbia logs to Puget Sound were still in effect as this review number went to press, and there were no visible signs of any change in either situation. Among the mills were one or two that may be closed down permanently, even after the war is over. As for the British Columbia logs, a resumption of shipments has been promised, but observers are asking an apparently unanswerable question: "Where will they get them?"

The Pacific Logging Congress in December, 1942, passed a resolution urging government action to

return 5,000 fallers, buckers and riggers to the woods from shipyards and other wartime industries. These figures are quoted from the resolution.

A government "freeze" order in the fall aimed to keep the men in the woods but it locked an already almost empty barn. It developed many leaks as well. It was clearly the responsibility of the labor unions—those in the woods and also those embracing shipyard employees and others in war industries—to take action to remedy this situation. A government publicity campaign in 1943 helped, but not enough. In Canada the handling of the problem was equally ineffectual.

It should be observed, however, that one important reason for a shortage of expert woodsmen is that for twenty years there have been comparatively few young men attracted to that field. It seems to be too hard work for this generation. The old woodsmen have, of necessity, passed on to their reward.

### PACIFIC COAST PULP PRODUCTION — 1928-1942

Pacific Coast States and British Columbia  
(Tons of 2,000 lbs.)

	1928 Tons	1929 Tons	1930 Tons	1931 Tons	1932 Tons	1933 Tons	1934 Tons
Washington .....	349,107	323,948	366,137	580,016	420,329	583,770	709,380
Oregon and California .....	213,407	256,346	248,952	237,532	187,133	189,332	240,167
British Columbia .....	310,961	304,619	335,429	310,029	239,586	343,897	383,818
<b>Total Pacific Coast .....</b>	<b>873,475</b>	<b>1,085,113</b>	<b>1,150,518</b>	<b>1,127,577</b>	<b>867,248</b>	<b>1,117,999</b>	<b>1,333,365</b>

	1935 Tons	1936 Tons	1937 Tons	1938 Tons	1939 Tons	1940 Tons	1941† Tons	1942*
Washington .....	775,722	895,797	1,184,390	836,939	1,107,318	1,443,121	1,475,671	1,968,658
Oregon and California .....	262,221	302,634	338,802	250,788	270,829	396,142	518,479	
British Columbia .....	377,522	416,433	425,558	242,020	321,132	443,564	494,811	
<b>Total Pacific Coast .....</b>	<b>1,415,465</b>	<b>1,614,864</b>	<b>1,948,750</b>	<b>1,329,767</b>	<b>1,699,279</b>	<b>2,284,827</b>	<b>2,488,861</b>	<b>2,416,930</b>

Source—U. S. figures up to and including 1940, from U. S. Dept. of Commerce, Bureau of Census; B. C. figures from Dept. of Lands, Forest Branch; and Dominion Bureau of Statistics.

† Figures based upon United States Pulp Producers Association total for Oregon and Washington. Division of production between Oregon and Washington estimated by Pacific Pulp & Paper Industry. No wood pulp production in California.

\* No reliable estimated division between Pacific Coast states possible because of mill shutdowns and other factors.

### PULP WOOD CONSUMPTION — 1928-1941

Pacific Coast States and British Columbia

	1928 Cords	1929 Cords	1930 Cords	1931 Cords	1932 Cords	1933 Cords	1934 Cords
Washington .....	651,637	956,132	1,000,001	1,025,878	688,326	1,094,852	1,203,518
Oregon and California .....	308,264	340,745	351,053	319,876	265,470	241,841	322,287
British Columbia* .....	383,008	352,444	373,397	363,688	304,185	375,450	428,287
<b>Total Pacific Coast .....</b>	<b>1,342,929</b>	<b>1,649,321</b>	<b>1,724,451</b>	<b>1,709,442</b>	<b>1,257,981</b>	<b>1,712,143</b>	<b>1,954,092</b>

	1935 Cords	1936 Cords	1937 Cords	1938 Cords	1939 Cords	1940 Cords	1941† Cords
Washington .....	1,324,356	1,509,340	2,169,717	1,450,016	1,913,660	2,489,662	2,508,641
Oregon and California .....	369,327	423,839	511,419	342,229	468,334	379,804	777,719
British Columbia* .....	421,393	432,143	463,478	239,545	364,611	508,931	569,033
<b>Total Pacific Coast .....</b>	<b>2,115,076</b>	<b>2,385,322</b>	<b>3,146,614</b>	<b>2,051,790</b>	<b>2,748,805</b>	<b>3,378,397</b>	<b>3,855,393</b>

Source—U. S. figures from U. S. Dept. of Commerce, Bureau of Census; B. C. Figures from Dept. of Lands, Forest Branch; and Dominion Bureau of Statistics.

† Estimated.



## Manpower Crisis Highlighted 1942 On Pacific Coast

### OUTSTANDING EVENTS

Here are outstanding events of 1942 in the Pacific Coast industry:

**April 23-4**—Wanting to do more war work, the Pacific Coast Association of Pulp and Paper Manufacturers member **MILLS DEDICATED THEIR MACHINE SHOPS TO AN INTENSIVE PROGRAM OF WAR WORK** for shipyards, war foundries, etc. (see article on page 7 of this issue).

**May 26-June 8**—Highlighting another year of excellent management labor relations and unbroken peace between the two groups, committees of two AFL unions and the PCAPPM negotiated **A NEW WAGE AGREEMENT** in the presence of 275 labor and management delegates in Portland. It provided a ten cents an hour increase for all employed over six months and 7½ cents for those of less service. These were the highest wages in the history of the industry anywhere.

**May 31**—A. H. B. Jordan, president of Everett Pulp & Paper Company and Sumner Iron Works, died in Everett. On July 27, W. J. Pilz was elected president and general manager of Everett Pulp & Paper and Anson B. Moody, vice president and assistant general manager.

**July 17-August 8**—Joint labor-management plan for maximum **CONTRIBUTION OF MANPOWER NEEDS TO WAR PRODUCTION** proposed by unions and PCAPPM. Approved on August 8 by Gen. Frank J. McSherry, WMC director of operations. It required a skills survey of industry (10,000 males), release of men to wartime industries in cases where they could use higher skills, increased employment of women, etc. First such voluntary program undertaken by any industry—but it was not entirely successful.

**August 15**—Gen. H. G. Winsor, WMC director for Washington and Oregon, and Selective Service and U. S. Employment Service directors in both states signed proclamation declaring pulp and paper manufacturing **"AN ESSENTIAL INDUSTRY"** and telling employees it is their "patriotic duty to remain on present jobs."

**September 1**—**EMBARGO ON BRITISH COLUMBIA LOG EXPORTS** to United States mills due to manpower shortage and restricted log output. This Canadian order upset pulp allocations of WPB in the United States, as it suddenly cut off pulpwood log exports which had been crossing the line at a rate of about 150,000,000 feet a year.

**Sept. 21**—Ossian Anderson, president of Puget Sound Pulp & Timber Company and vice president of St. Regis Paper Company, died in Vancouver, B. C., hotel. A week later, Fred G. Stevenot was elected president of Puget Sound and Lawson Turcotte, executive vice president. Walter DeLong, also

elected vice president, resigned October 15 when elected vice president of St. Regis.

**October 6**—WPB Order M-251 authorized director general of operations to **ALLOCATE PULPWOOD LOGS TO AND FROM OPERATORS**, regardless of ownership, in Puget Sound area. Allocations made on basis of critical products, to protect rayon and ordnance pulp production. Extended October 27 to Columbia-Willamette area, but applied there by allocations to sawmills cutting critical lumber. Simultaneously, a **PROGRAM OF EARMARKING LOGS** when scaled for aircraft production was instituted and various mills voluntarily made installations in order to recover aircraft grade cants from pulp logs. Allocations of several million feet were made up to January, 1943, when the allocations to and from pulp mills was discontinued. More mills by then were producing essential pulp.

**October 24**—WPB order withholding logs from Tacoma mills of St. Regis Paper Company and Rayonier Incorporated and from Anacortes mill of Scott Paper Company, forced **SHUTDOWN OF THOSE THREE MILLS**, effective November 1. Officially stated this would "release about 1,100 men for reemployment in war industries," but many were not so reemployed. But, eventually, log shortages justified some form of drastic curtailment. The WPB order also **BANNED FURTHER PAPER PULP SHIPMENTS EASTWARD**. This part of the order was not relaxed until January of this year.

### U. S. PACIFIC COAST WOOD PULP PRODUCTION, 1923-1942

Tons of 2,000 lbs.

1923	299,596	1930	815,089	1937	1,523,192
1924	309,433	1931	817,548	1938	1,087,747
1925	322,594	1932	607,662	1939	1,384,147
1926	378,005	1933	773,102	1940	1,839,263
1927	449,218	1934	935,033	1941	1,994,150
1928	562,514	1935	1,011,421	1942	1,968,658
1929	780,494	1936	1,198,431		

### BRITISH COLUMBIA PULP AND PAPER AND ALL FOREST PRODUCTS ESTIMATED VALUE OF PRODUCTION

Including Loading and Freight Within the Province

1937-1942

	1937	1938	1939	1940	1941	1942	10-Year Av.
Pulp and Paper	\$17,214,000	\$11,066,000	\$16,191,000	\$22,971,000	\$27,723,000	\$27,457,000	\$17,353,000
All Forest Products	80,872,000	67,122,000	88,221,000	102,804,000	119,920,000	124,720,000	79,489,000

Source: Report of the British Columbia Forest Service.

## OTHER 1942 EVENTS

(The following review is necessarily limited to events reported or released to this magazine for publication.)

## January

TAPPI (Pacific section) dinner at Longview (Jan. 6), attended by 97. "Lime" panel discussion by G. H. Galloway, Camas, leader; Wolf G. Bauer, Williams, Ore.; Lloyd Ewing, Longview; A. M. Cadigan, Tacoma; W. C. Jacoby, Camas, and Gerald F. Alcorn, Everett.

Archie Robertson appointed plant engineer, Powell River Co.

Crown Zellerbach 35-year pins awarded Ernest Gregory, plant superintendent, and Albert Bruce, Los Angeles.

## February

TAPPI dinner (Feb. 3) at Everett; 104 attended. "Maintenance" panel discussion by Carl E. Braun, Oregon City, leader (and chairman of Pacific TAPPI section); Orville Fox, D. K. MacBain, J. J. McCarthy, Russell LeRoux, Carl Ries, A. E. Duke and G. F. Alcorn, Everett; A. S. Quinn and W. R. Gibson, Seattle, and Harry Richmond, Portland. Prof. Bror L. Grondal, U. of Washington, discussed logging waste values.

Papermakers and Associates of Southern California (PASC) met (Feb. 12) at Los Angeles; 54 attended. Talks by Prof. Ivan Benson, U. of Southern California on Sweden; Robert Abbott, C. P. Hall Co., on rubber, and H. A. Des Marais, General Dyestuffs, on dyestuff situation.

Crown Zellerbach 40-year pin to C. C. Coulson and 35-year pins to Erma Stout and Grant Salisbury at Camas.

Robert B. Wolf, Longview, awarded Gold Medal by National TAPPI at New York (Feb. 19) for outstanding contribution to technical advancement of industry.

New York convention election results:

R. S. Wertheimer, Longview, elected trustee of national TAPPI.

J. D. Zellerbach, San Francisco, re-elected vice president of American Paper & Pulp Association.

John H. Smith, Seattle, Ossian Anderson, Bellingham, and U. M. Dickey, Everett, elected to board of U. S. Pulp Producers Association.

Hawley Company's new highpowered air raid siren, designed by Carl E. Braun, dedicated to Oregon City.

## March

W. S. Lucey, Hoquiam, appointed general manager in Seattle of Washington state operation of Rayonier Incorporated. Other appointments: Lyall Tracy, resident manager, and John W. Bagwill, assistant manager, Grays Harbor division; William E. Breitenbach, resident manager, Port Angeles division; Arthur W. Berggren, assistant to vice president, Seattle.

G. S. Brazeau, manager Everett mill, Pulp Division, Weyerhaeuser Timber Co., died (Mar. 17).

Crown Willamette Paper School Graduation, Camas (Mar. 10-11); 41 fourth-year graduates. Surprise award of National Industrial Conference prize for winning letter on foreman's role in war to Fred A. Olmsted, principal of the school (554 competed, nationwide).

TAPPI dinner (Mar. 2) at Portland; 65 attended. Lee Baltzelle, Seattle, talked on mechanical insurance, and James N. Orr, Portland, on spectrochemistry.

## April

Timber Controller, invoking wartime powers, ordered Canadian export of 10,000,000 ft. of hemlock logs to a Washington mill in defiance of ban by British Columbia minister of lands. B. C. price

of hemlock logs raised \$2 per 1000 B. F. to \$15 to stimulate production.

TAPPI dinner (Apr. 7) at Port Angeles; 65 attended. M. L. Edwards, Longview, talked on flat screen dynamics, F. W. Flynn, Camas, on indirect heating for digesters.

PASC election (Apr. 9) at Los Angeles; 40 attended. U. Grant Farmer, Vernon, succeeded Herman L. Joachim, Los Angeles, as chairman. Charles Frampton, Pomona, elected vice chairman, and Frank Wheelock, Vernon, secretary-treasurer.

Paper Mill Men's Club of Southern California election (Apr. 10) at Santa Monica. Paul Raab elected president, succeeding Lester Remmers; J. Dwight Tudor elected vice president; Ansel A. Ernst, secretary, and Gerry A. Thiem, treasurer.

Pacific Paper Board Co., Longview, operates new Dilts Hydrapulper (75 tons, 24 hrs.).

Pacific Mills, Ltd., Ocean Falls, B. C., builds new screen room.

## May

Russell J. LeRoux appointed manager, Everett mill, Pulp Division, Weyerhaeuser Timber Co.

Harry D. Fair, chairman of board and treasurer, Soundview Pulp Co., appointed regional director for War Production Board in San Francisco.

OPA meetings for 200 wholesale paper and paperboard merchants in San Francisco (May 14-15) to explain price provisions.

## June

Joint meeting of American Pulp & Paper Mill Superintendents and TAPPI, Pacific sections, in Portland (June 5-6); 145 men and 78 women—wives, daughters, etc.—attended. Robert T. Petrie, Portland, general chairman. Owing to illness of Merrill E. Norwood, Vancouver, chair-

# PROPORTION OF UNITED STATES MARKET FOR PULP SUPPLIED BY AMERICAN PULP MILLS AND FOREIGN PULP MILLS\*—1940-1941-1942

Tons—2,000 Lbs.

TOTALS By Grades.	1940		1941†		1942†	
	Pulp Produced By U. S. Mills for Sale in Domestic Market—1940	Pulp Imported Into the United States 1940	Pulp Produced By U. S. Mills for Sale in Domestic Market—1941	Pulp Imported Into the United States 1941	Pulp Produced By U. S. Mills for Sale in Domestic Market—1942	Pulp Imported Into the United States 1942
Total—All Grades .....	1,366,879	1,224,632	1,723,584	1,145,000	1,715,000	1,200,000
Total—Sulphite .....	1,005,415	733,829	1,228,530	740,000	1,197,091	800,000
Bleached Sulphite .....	635,264	352,916	767,970	369,000	837,631	370,000
Rayon .....	166,176	113,945	196,564	122,000	.....	.....
Other .....	469,088	238,971	571,406	267,000	.....	.....
Unbleached Sulphite .....	370,151	380,913	460,560	351,000	359,460	430,000
Total—Sulphate .....	219,185	308,464	319,341	176,000	365,554	157,000
Bleached Sulphate .....	75,658	84,887	72,968	60,000	76,422	52,000
Unbleached Sulphate .....	143,527	223,577	246,373	116,000	289,132	105,000
Total Groundwood .....	40,800	171,513	57,862	204,000	47,000	212,000
Total Soda .....	97,400	10,763	111,200	17,000	98,726	19,000
Total Semi-Chemical .....	.....	.....	6,513	.....	.....	.....
Total—Miscellaneous, Damaged and Off-Quality .....	27,815	63	.....	.....	.....	.....

\*Table prepared by Pacific Pulp & Paper Industry from United States Pulp Producers Association data on wood pulp production, shipments and stocks; and from import data supplied by the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.

†Pulp Produced By U. S. Mills for Sale in Domestic Market\* includes that part of the stocks on hand at the end of the year intended for future shipment to domestic buyers.

†1941 and 1942 figures estimated by United States Pulp Producers Association.

man of superintendents' section, George H. McGregor, Longview, first vice chairman, headed that group. Chairman Carl E. Braun, Oregon City, presided for TAPPI. Edward P. Wood, Longview, elected chairman to succeed Braun for forthcoming year. Clarence E. Enghouse, West Linn, Ore., elected vice chairman; Robert M. True, Portland, secretary-treasurer.

Annual Shibley award for best TAPPI paper of past year made to Donald G. Felthous, Longview, for Oct. 1941 paper on SO<sub>2</sub> recovery from sulphite vomit stacks. Papers given at joint meeting by Carl Sholdebrand, Oregon City, on fast-hydrating unbleached sulphite pulp; by Carleton L. Clark, Norwalk, Conn., on vacuum pumps, and by Otto L. Hudrlik, Portland, on slime control.

Clarence E. Enghouse appointed assistant manager, Crown Willamette Paper Co., division of Crown Zellerbach Corp., West Linn. E. H. Nunn appointed technical supervisor.

Nils M. Anderson, Tacoma, elected third vice president, American Pulp & Paper Mill Superintendents, Grand Rapids, Mich., national convention (June 16-18).

Paul Middlebrook appointed assistant to director of public and industrial relations, Crown Zellerbach Corp., San Francisco; succeeded as mill manager, Lebanon, Ore., by Malcolm Otis.

PASC meeting in Los Angeles (June 18); 47 attended. C. L. Clark, Los Angeles, talked on water removal on paper machines and A. J. Smith, Vernon, on the state of industry.

### July

U. Grant Farmer, plant superintendent, Vernon division, Fibreboard Products Inc., and chairman of PASC, died (July 1).

Frank H. Wheelock and George E. Eberhard appointed board mill manager and board mill superintendent, respectively, Vernon division, Fibreboard Products Inc.

J. G. Long appointed manager of production, Fir-Tex Insulating Board Co., St. Helens, Ore.

Crown Zellerbach 30 year pins awarded Adolph Paris and Lee Shannon, Camas.

### August

Alexander R. Heron, director of public and industrial relations, elected vice president of Crown Zellerbach Corp., San Francisco.

Fred A. Olmsted appointed assistant to vice president in charge of operations, Crown Zellerbach Corp., San Francisco, and succeeded as technical supervisor in Camas by G. H. Gallaway.

E. S. Umland, superintendent, finishing room, Longview Fibre Co., died (Aug. 23).

PASC meeting in Los Angeles, Aug. 20; 43 attended. Charles Frampton, Pomona, succeeded the late U. Grant Farmer as chairman. Talks by T. D. Beckwith, U. of California, at Los Angeles, on deterioration of paper, and Alden C. Fensel, Taxpayers Association, on cost of living indexes.

Herbert McKenzie, manager, opens new British Columbia branch of Canadian Pulp & Paper Association in Vancouver, B. C.

Harold Moorhead appointed resident engineer of Powell River Company.

British Columbia Pulp & Paper Co. completed \$750,000 expansion at Woodfibre and Port Alice, including installation of new digesters, boilers, screens, etc.

Sorg Pulp Co., Port Mellon, B. C., completes new engine, boiler and machine rooms, installation of drying machine, filter plant, etc., and acquires fleet of barges.

Crown Zellerbach 50-year pin awarded William R. McHaffie, resident manager, Crown Willamette Paper Company, Los Angeles.

### September

Alexander R. Heron appointed colonel, U. S. Army, and chief of civilian personnel branch, Service of Supply (1,000,000 civilian employees). Succeeded as director of public and industrial relations, Crown Zellerbach Corp., by Frank A. Drumb.

D. S. Denman, Seattle; Walter De Long, Tacoma, and Irving T. Rau, St. Helens, appointed to revised pulpwood industry advisory committee to WPB, Washington, D. C.

Paper Mill Men's Club of Southern California held annual Hi-Jinks (Sept. 26) in Los Angeles.

W. B. Zumwalt, retired general superintendent, Powell River Company, died (Sept. 13) at Portland, Ore., home.

William R. Barber, technical director, Crown Zellerbach Corp., appointed to WPB Paper Industry technical development committee.

Hospital stretchers made of paper by Jaite Paper Bag Co., St. Helens, Ore., and St. Regis Paper Company, division in Emeryville, Calif.

Pan-American Airways terminal, Treasure Island, repacks clipper cargoes in corrugated paper instead of wood at announced saving of 500 lbs. per clipper trip.

### October

TAPPI dinner at Everett (Oct. 6); 103 attended. Papers by R. S. Hatch, Longview, on quick method of viscosity determination and Clyde F. Holcomb, Seattle, on maintenance of trucks in mills.

Crown Willamette Paper School at Camas begins tenth annual term despite war handicaps (Oct. 10).

PASC meeting at Los Angeles (Oct. 23); 40 attended. Talks by Frank H. Wheelock, Vernon, on beater room control and David Babcock, Los Angeles, on manpower problems.

### November

TAPPI dinner at Camas (Nov. 3); 66 attended. Papers by A. B. Thomander, San Francisco, on uses of micarta and Frank Zaniker, West Linn, on welding as applied to beater lifting tackle.

J. A. Harris, paper mill superintendent, Crown Zellerbach mill at West Linn, makes successful use of a "Victory" fourdrinier wire patch applied without sewing in five to eight minutes. Described in November PACIFIC PULP & PAPER INDUSTRY.

Crown Zellerbach Corporation announces new dyphenel citrus wrapper with protective and preservative qualities.

Nursery for children of women war workers, one of first in country, opened in Camas, Wash., with cooperation of the Crown Zellerbach mill.

### December

Leo C. Kelley, Woodfibre sulphite superintendent, appointed general sulphite superintendent of Woodfibre and Port Alice mills of British Columbia Pulp & Paper Co., with Vancouver offices.

E. J. "Opie" Hayes appointed regional representative, Seattle, pulp and paper division, WPB.

Robert Misphey appointed assistant technical director, Crown Zellerbach Corporation, and Walter Jacoby, assistant technical director, Camas mill.

President J. J. Herb and employes of Westminster (B. C.) Paper Company form 20-Year Club (Dec. 23).

New paperboard container for liquid and dry products, with increased strength and rigidity, developed by Julius A. Zinn, Jr., ex-Everett dairyman.

Willamette River on way (Dec. 31) to highest flood level in 20 years, causing damage and interruptions of work at three pulp and paper mills. Hawley Company's Mill A shuts down on eve of New Year.

### UNITED STATES

WOODPULP CONSUMPTION CLASSIFIED BY TYPE OF PULP: 1941 AND 1940  
[Tons of 2,000 pounds]

Type of pulp	1941	1940
All types.....	11,134,440	9,781,739
Mechanical, total.....	2,276,784	2,096,125
Sulphite fiber, total.....	3,348,476	2,906,794
Unbleached.....	1,543,146	1,348,951
Bleached.....	1,805,330	1,557,843
Sulphate fiber, total.....	4,476,672	3,964,729
Unbleached.....	3,710,405	3,292,130
Semi-bleached.....	207,894	178,405
Bleached.....	558,383	494,194
Soda fiber, bleached and unbleached.....	652,622	531,581
Semi-chemical, off-quality, screenings, and miscellaneous.....	379,886	282,510

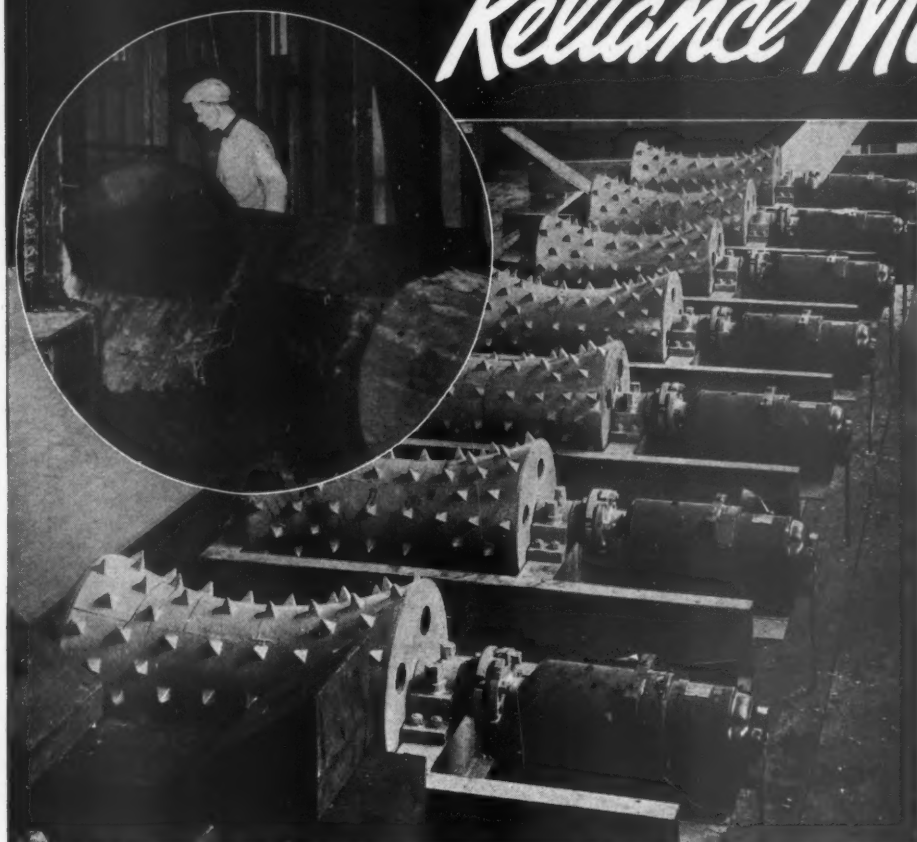
550 mills reporting.

Source: Department of Commerce, Bureau of the Census - For the War Production Board.

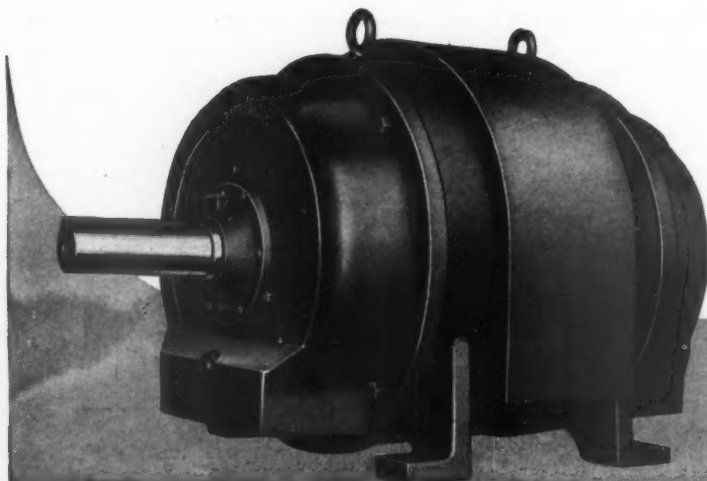


# Reliance Motors

## AT NEW

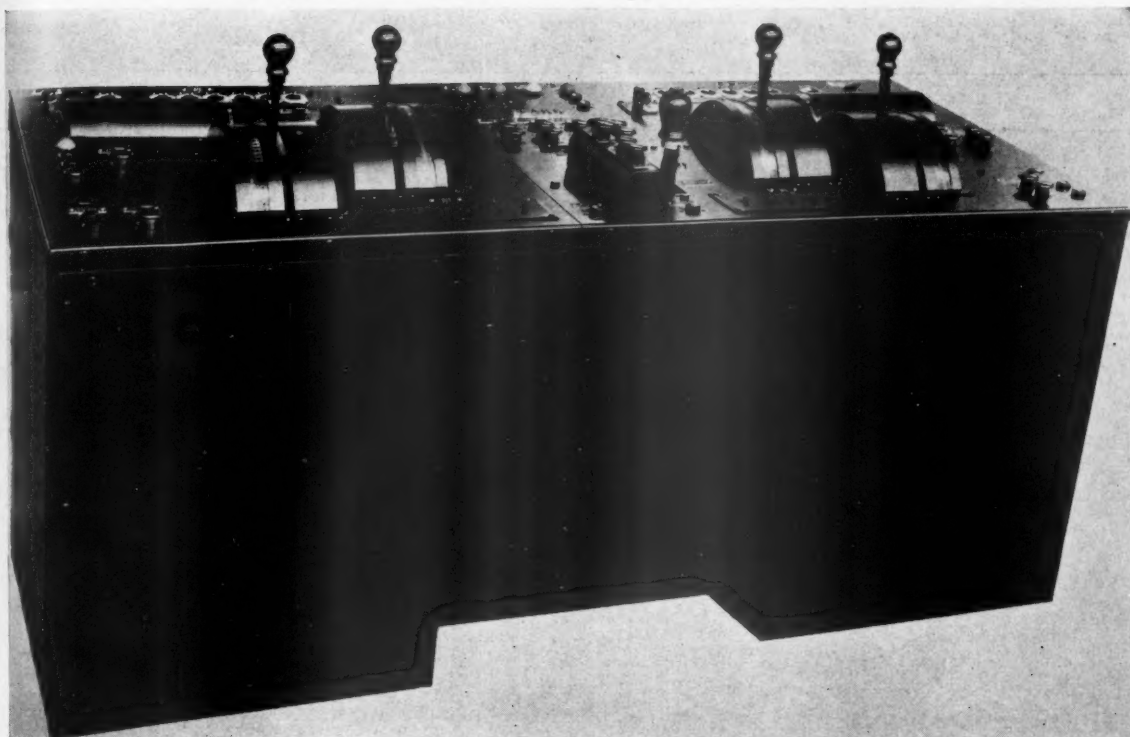


**LIVE ROLLS OF NEW DESIGN**, each roll independently driven by a Reliance Splash-proof Gearmotor, carry the barked logs to the chipper at a maximum speed of 90 ft. per minute. A log approaching the chute to the chipper on these concave, spiked live rolls is always under positive and completely flexible control, regardless of the size, shape or contour of the log. With this method—the **FIRST** installation of individually motor-driven live rolls in the lumber industry—logs can be held, positioned, reversed or sent forward at will. The installation is clean, trim and safe.



**Splash-proof A-c. Reliance Induction Motor.** Protected from splashing water, bark and chips. Used for indexing system. Reliance Gearmotors with this same protection are used for lift skids, doors, deck chains, lift arms and knee retraction.

## LARGE, MODERN LOG BARKING MILL



"3C" BENCH BOARD OR OPERATOR'S DESK

vide means of handling unusual conditions.

The entire sequence of operation for barking one log requires approximately one minute. This is punishing service, yet "3C" Electrical Control stands up under gruelling operation, and maintains the accurate settings needed to produce clean barked logs.

Not shown are "3C" Bulletin 107 Brakes, "3C" Bulletin 102 Cam and

Hatchway Limit Switches, each functioning to make the cycle of operation perfect. This problem of Electrical Control, which was worked out in co-operation with The Reliance Electric and Engineering Company, is typical of the heavy duty problems solved by "3C" engineers.

The same careful, practical engineering service is available to solve your electrical control problems.

OFFICES IN PRINCIPAL CITIES



**THE CLARK CONTROLLER CO.**



1146 EAST 152<sup>ND</sup> ST.

CLEVELAND, OHIO

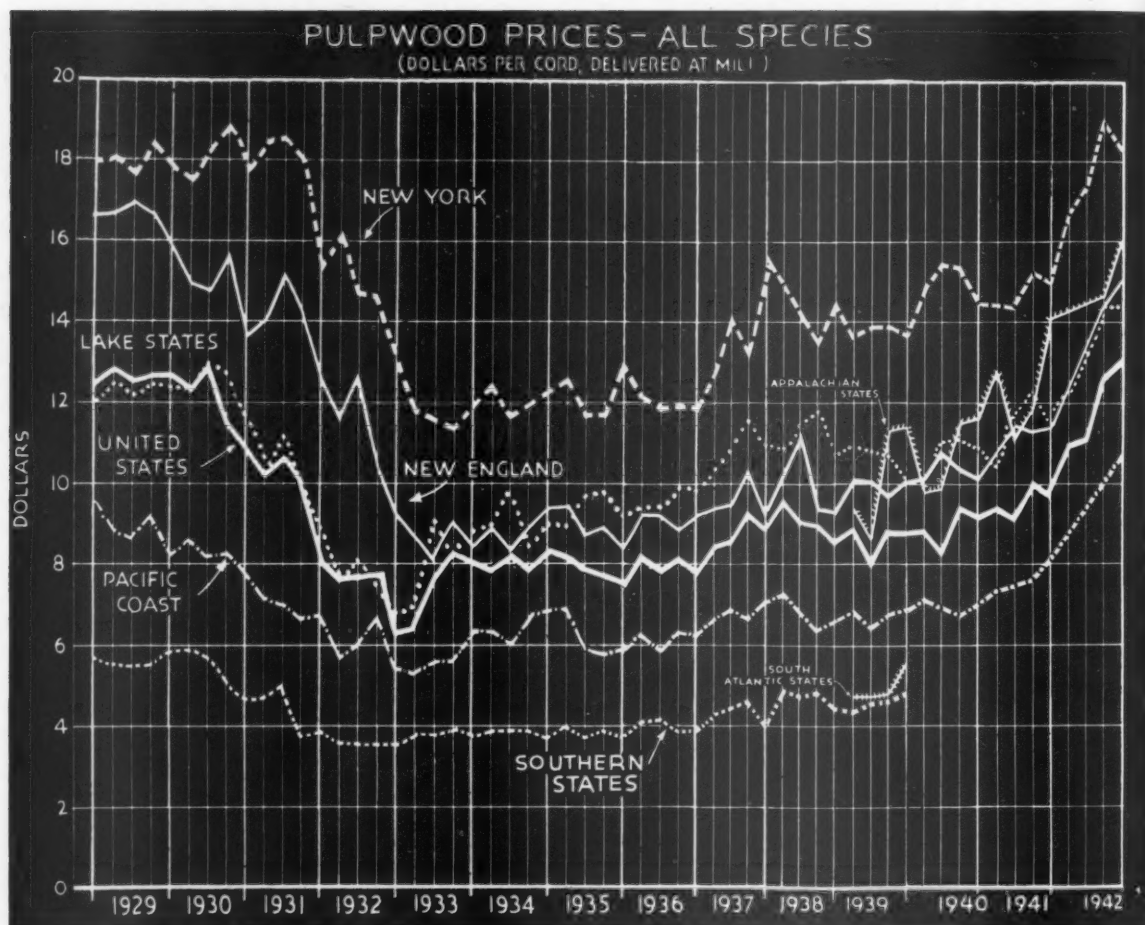
### PULPWOOD PRICES F. O. B. MILL BY REGIONS ALL SPECIES

(Dollars per Cord of 128 Cubic Feet)

1942

Quarter	U. S. Total	New England	New York	Lake States	Appalachian States	Pacific Coast
1st	\$11.10	\$12.31	\$16.63	\$12.45	\$14.27	\$8.80
2nd	11.25	13.44	17.50	13.40	14.46	9.42
3rd	12.72	14.63	19.37	14.45	14.58	9.91
4th	13.05	15.25	18.47	14.44	16.43	11.06

Source: American Paper and Pulp Association.  
Data covering Atlantic and Southern States included under U. S. Total.







PUSH YOUR LUCK TOO FAR AND  
*"You'll be Sorry!"*

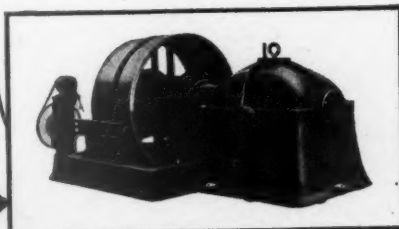
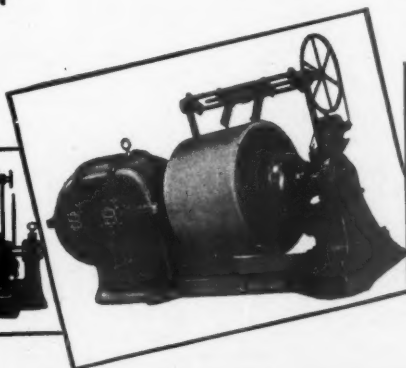
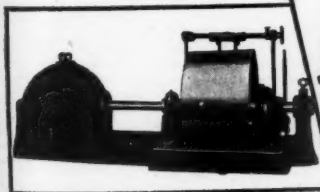
If you wait until a drive breakdown actually occurs, you'll be frantic...because these days fast service even on repairs is next to impossible.

It is far better to anticipate repair needs wherever you can...gain a cushion of time to offset part of the delay that will inevitably occur. Perhaps you can even avoid several days of down time.

SPIRAL BEVEL  
 HYPOID  
 CAL. REVERSE  
 INCHING  
 DOUBLE REDUCTION  
 EXTENDED SHAFT  
 SPECIALS

The Black-Clawson line of drives is a complete line...all sturdily built for long-time, vibrationless service. More than 600 in use.

Get Bulletin 127-B.



**THE BLACK-CLAWSON CO., HAMILTON, OHIO**

SHARTLE DIVISION, MIDDLETOWN, OHIO, DILTS DIVISION, FULTON, N. Y.

## B. C. Log Exports Show Big Drop in 1942

● Restrictions imposed by the Canadian Timber Control, reduced production and greater consumption in the home markets were chiefly responsible for a decline in the export of logs from British Columbia to the United States in 1942.

During the current year the same conditions will apply, but the primary factor in the situation during the early months of 1943 has been the lower output of logs due to manpower shortage and unprecedentedly severe winter weather. The fact that most of the logging camps had inadequate crews available for the woods last year greatly curtailed development work, with the result that the log supply has been largely a hand-to-mouth proposition.

While drastic restrictions on pulpwood log as well as Douglas fir log exports were arbitrarily imposed by the Timber Control on September 1, 1942, Timber Controller A. H. Williamson announced in Vancouver last January that in future

export of logs would be based on adherence to the Hyde Park Agreement which provided for sharing of raw materials between Canada and the United States.

Up till early summer of 1943, however, it had been impossible for the Timber Controller to implement this pledge of co-operation with the industry in the United States, and Puget Sound pulp mills continued to be without hemlock and balsam logs they had been expecting from British Columbia. When they do get them will depend on the extent of improvement in the log supply in the province, where pulp and paper as well as lumber mills have been complaining of short supplies for months.

The attitude of the Canadian Timber Control has been that while every effort will be made to ship pulp logs to the United States as soon as possible, it will not be justified to authorize such shipments so long as British Columbia mills are compelled to curtail operations even to the extent of week-long shut-downs, as has been the case at Powell River.

In 1942 British Columbia exported hemlock logs to the extent of 88,758,672 feet board measure, practically all to the United States, 18,034,878 feet of balsam and 2,241,285 feet of spruce. In 1941 the corresponding figures were 153,284,101 feet; 38,248,633 feet, and 6,591,508 feet, or nearly twice as much.

### British Columbia Log Exports (All Species)

	Feet Board Measure
1942	156,011,950
1941	307,079,906
1940	217,527,358
1939	312,733,462
1938	259,673,082
1937	270,474,094
1936	218,828,835
1935	235,291,766
1934	172,735,751
1933	208,940,834
Ten-year average	235,929,704

### Pulpwood Timber Cut In British Columbia In 1942

	F. B. M.
Spruce	177,081,686
Hemlock	498,310,088
Balsam	97,794,723
Fir	1,454,653,378

The totals represent the cut for all purposes and do not differentiate between lumber, plywood, pulpwood, etc.

## CANADA PULP PRODUCTION

	(Tons of 2,000 lbs.)			
	Mechanical Tons	Sulphite Tons	Sulphate <sup>1</sup> Tons	Total Tons
1920	1,090,114	654,273	188,487	1,922,774
1921	931,560	476,929	131,337	1,539,826
1922	1,241,185	678,878	217,862	2,137,925
1923	1,449,106	749,668	224,812	2,413,586
1924	1,427,782	768,035	218,207	2,414,024
1925	1,621,917	842,785	242,207	2,706,909
1926	1,901,268	995,203	256,074	3,152,545
1927	1,922,124	1,016,060	262,512	3,200,696
1928	2,127,699	1,117,227	256,969	3,501,895
1929	2,420,774	1,236,232	250,104	3,907,110
1930	2,283,130	1,076,804	188,253	3,548,187
1931	2,016,480	941,586	145,156	3,103,222
1932	1,696,021	941,579	144,367	2,781,967
1933	1,859,049	937,313	182,988	2,979,350
1934	2,340,441	1,020,493	205,980	3,566,914
1935	2,458,000	1,025,000	206,000	3,689,000
1936	2,910,338	1,168,927	273,494	4,352,759
1937	3,308,517	1,373,232	312,741	4,994,490
1938	2,650,000	925,000	258,000	3,833,000
1939	2,738,011	1,028,820	313,628	4,080,459
1940	3,305,484	1,480,545	399,267	5,290,762
1941	3,494,922	1,664,516	426,743	5,720,847
1942*	3,239,000	1,781,000	461,000	5,515,000

<sup>1</sup>Prior to 1939 the sulphate totals included sulphate pulps only. 1939, 1940 and 1941 sulphate totals include soda and other pulp, according to the Dominion Bureau of Statistics.

\*Estimated by Canadian Pulp & Paper Association.

## BRITISH COLUMBIA Review of Pulp and Paper Production 1919 - 1942

	Sulphite	PULP Sulphate	Tons Groundwd	PAPER— Newsprint	Other
1942*	—	—	—	252,559	74,915
1941	—	—	—	276,000	75,453
1940	—	—	—	262,144	68,428
1939	—	—	—	216,542	50,870
1938	—	—	—	176,639	39,348
1937	—	—	—	264,000	53,000
1936	—	—	—	276,710	41,443
1935	—	—	—	262,123	33,287
1934	130,176	15,630	209,359	267,406	26,777
1933	122,265	15,715	185,451	237,107	23,492
1932	85,419	10,889	161,502	205,050	24,031
1931	124,521	11,744	170,432	217,562	17,709
1930	130,462	13,055	172,539	224,928	20,446
1929	112,925	15,647	151,066	201,009	19,492
1928	120,413	15,050	170,005	225,477	15,960
1927	119,005	13,700	163,548	214,010	13,745
1926	108,381	15,000	136,123	176,924	10,389
1925	92,514	16,856	121,363	148,201	9,261
1924	89,839	14,403	112,001	136,281	9,633
1923	99,878	9,932	107,266	142,928	7,709
1919	80,347	9,473	99,769	123,607	7,202
1922	86,894	9,674	100,759	124,639	7,945
1921	68,502	6,519	89,725	110,176	6,934
1920	92,299	16,380	108,655	136,832	9,792
*Estimated.					
	Total Production All Grades—Tons		Estimated value of production:		
	Pulp	Paper			
1942	448,272	327,474			
1941	494,811	351,453			
1940	438,500	330,572			
1939	321,132	272,117			\$18,690,573
1938	242,020	222,305			14,562,475
1937	425,558	320,920			21,625,305
1936	416,433	320,555			19,012,369
1935	377,522	299,816			10,708,145
1934	383,818	299,502			10,347,123
1933	323,431	260,599			10,852,008
1932	259,586	228,075			11,156,000
1931	310,029	244,397			13,508,000
1930	316,056	245,374			16,520,000
1929	279,638	220,501			14,400,000
1928	305,468	241,437			16,755,000
1927	296,253	227,755			18,505,000
1926	259,504	187,313			16,315,000
1925	230,733	177,462			14,466,000
1924	216,243	145,934			13,938,000
1923	217,076	150,637			15,018,000
1922	197,327	132,584			12,590,000
1921	164,746	117,110			13,500,000
1920	217,334	146,624			
1919	189,589	130,809			

Source—British Columbia, Department of Lands, Report of the Forest Branch.

# NEW MACHINES MAKING PULP HISTORY

Eighteen Pacific-Western speed reducers are used in conjunction with the 171" diameter chipper and hydraulic log barker recently built by the engineers of the Weyerhaeuser Timber Company, Pulp Division, at Everett, Washington. These units are principally used on log hauls, transfers, log returns, chain conveyors and chip belts. The big chipper and barker at Weyerhaeuser are two of the most important machine developments in pulp-making history. They incorporate entirely new features. Their capacity is the greatest yet developed in this field. The fact that Pacific-Western reducers were selected as vital companion units to these new processing machines indicates that men who know pulp-making know, too, that as bigger and bigger machines are built for pulp, paper or lumber production, Western Gear Works has the reduction unit to match it.

Left, a Pacific-Western D-54 speed reducer pulls this 5" chip belt at a speed of 500 feet per minute at an incline of 21 degrees, 30 minutes. Belt is 120 feet center to center. Chips are carried by this belt from the chain conveyor to surge bin.



A PACIFIC-WESTERN  
SPEED REDUCER UNIT  
WITH COVER REMOVED

(Above) center background, is the 171" chipper with 100 H. P. motor. In right foreground is Pacific-Western D-58 speed reducer operating chain conveyor under chipper. This chain conveyor is 5 feet wide. Its speed is 150 feet per minute. Capacity  $6\frac{1}{2}$  units of chips per minute when piled 20" deep.



## WESTERN GEAR WORKS

417 NINTH AVENUE SOUTH, SEATTLE, WASHINGTON

Associated Companies: PACIFIC GEAR & TOOL WORKS — San Francisco • WESTERN GEAR WORKS — Lynwood, Cal. • PACIFIC GEAR WORKS of LOS ANGELES



## U. S. Paper and Paperboard Production And Consumption Decline Slightly

But 1942 totals for the United States are still near the all-time high records established in 1941. Essential nature of most of industry increases with development of new products but wartime competition for pulp and manpower restrict output.

PAPER and paperboard production and consumption in 1942 fell off slightly from the all-time high records set in 1941, according to estimates made by the American Paper and Pulp Association.

The decrease was only 4.5 per cent in production and 3.8 per cent in consumption. It was the first break in the series of annual record production and consumption years which began in 1938. It reflected the shifting of the industry to a wartime basis and for that reason the interruption can be considered as only a temporary wartime development.

The American Paper and Pulp Association made its estimates from data supplied by its divisional associations, the National Paperboard Association and the News Print Service Bureau.

Production in 1942 was estimated at 16,522,000 tons, a decrease of 4.5 per cent from the 17,304,143 tons produced in 1941, which was nearly a 20 per cent increase over 1940's total of 14,483,709 tons.

Consumption dropped off from the record high of 19,792,468 tons to 19,022,000, a decrease of 3.8 per cent after 1941 figures had gone nearly 19 per cent higher than those of 1940, which were 16,620,632 tons.

It is interesting to note that the

1941 figure hit the sharply rising consumption curve projected five years ago by Charles W. Boyce, then secretary of the American Paper and Pulp Association, and published on page 41. There was a slight downward turn from his curve for 1942. His prediction for 1950 is a consumption of paper and paperboard in the United States totalling 24,000,000 tons, an increase of nearly 5,000,000 tons over the 1942 total.

### 1941 Figures Revised

It should be noted the record figures of 1941, as revised and published in this issue, are slightly higher than those preliminary record estimates published in the 1942 Annual Review Number of the PACIFIC PULP & PAPER INDUSTRY. The production figure published then was 17,280,000 tons, revised to 17,304,143. The consumption figure published a year ago was 19,768,325 tons, now revised to 19,792,468.

There are slight revision of previously published figures in other tables in this section, including the Paperboard Mill Census. This is due to audit changes and other corrections which developed since the 1942 compilation was made.

For 1942, production of newsprint dropped from 1,045,269 tons to 981,000. Book papers totaled 1,830,000

tons, falling off from 2,026,291. Paperboard dropped off from 8,246,576 to 7,600,000 tons. Wrapping paper's decrease was from 2,860,000 to 2,742,000 tons. There were some increases, as shown in the accompanying tables. For instance, cover paper production rose from 28,000 to 33,000 tons and tissue papers showed considerable rise, from 870,000 to 1,050,000 tons.

Decreases in productions of many types of paper and paperboard are not by any means a reflection upon their wartime essentiality. There are many new essential products in the field—a long list of substitutes for metal and wood containers and many other unusual products developed with paper and paperboard. An important factor in the slight decrease of production and consumption was that pulp was not available and had to be allocated.

### Competition for Pulp

The paper and paperboard industries, despite the many essential products made at their plants, were competing with a rapidly expanding guncotton and explosives manufacturing industry and also a rapidly growing essential rayon industry for wood pulp.

Cellulose plastics, wartime industry that holds promise of a bright future for wood pulp after the war,

### U. S. PRODUCTION—1937-1942

(Tons of 2,000 lbs.)

	1937	1938	1939	1940	1941	1942
Total—All Grades .....	12,837,003	11,380,814	13,509,642	14,483,709	17,304,143	16,522,000
Newsprint .....	975,854	832,331	954,259	1,056,304	1,045,269	981,000
Book papers .....	1,520,523	1,336,814	1,534,591	1,655,423	2,026,291	1,830,000
Paperboard .....	5,802,036	5,103,767	6,104,968	6,449,548	8,246,576	7,600,000
Wrapping .....	2,053,387	1,865,856	2,238,993	2,500,818	2,860,000	2,742,000
Writing .....	578,147	481,719	594,594	599,452	735,000	827,000
Cover .....	24,437	20,216	19,401	26,944	28,000	33,000
Tissue .....	540,152	548,943	665,723	761,712	870,000	1,050,000
Absorbent .....	138,064	126,320	121,717	129,410	154,000	63,000
Building .....	608,086	570,454	659,090	682,460	853,000	750,000
All Other .....	596,317	494,394	625,306	621,638	504,007	646,000

Source: Bureau of Census, U. S. Department of Commerce, Census of Manufacturers for 1937, 1938, 1939, 1940, 1941 and 1942 estimates by the American Paper and Pulp Association and allied associations.

was also making increased use of wood pulp.

Heavy lend-lease shipments and shipments to South America of wood pulp were factors in reducing paper and paperboard production and consumption in the United States.

Kraft, the strongest of all papers made from wood pulp, was becoming a tremendously important wartime necessity. New treatments were developed to increase the dry strength, wet strength and other resistant qualities of products in demand by the Army, Navy and war agencies.

But a deterrent to the production

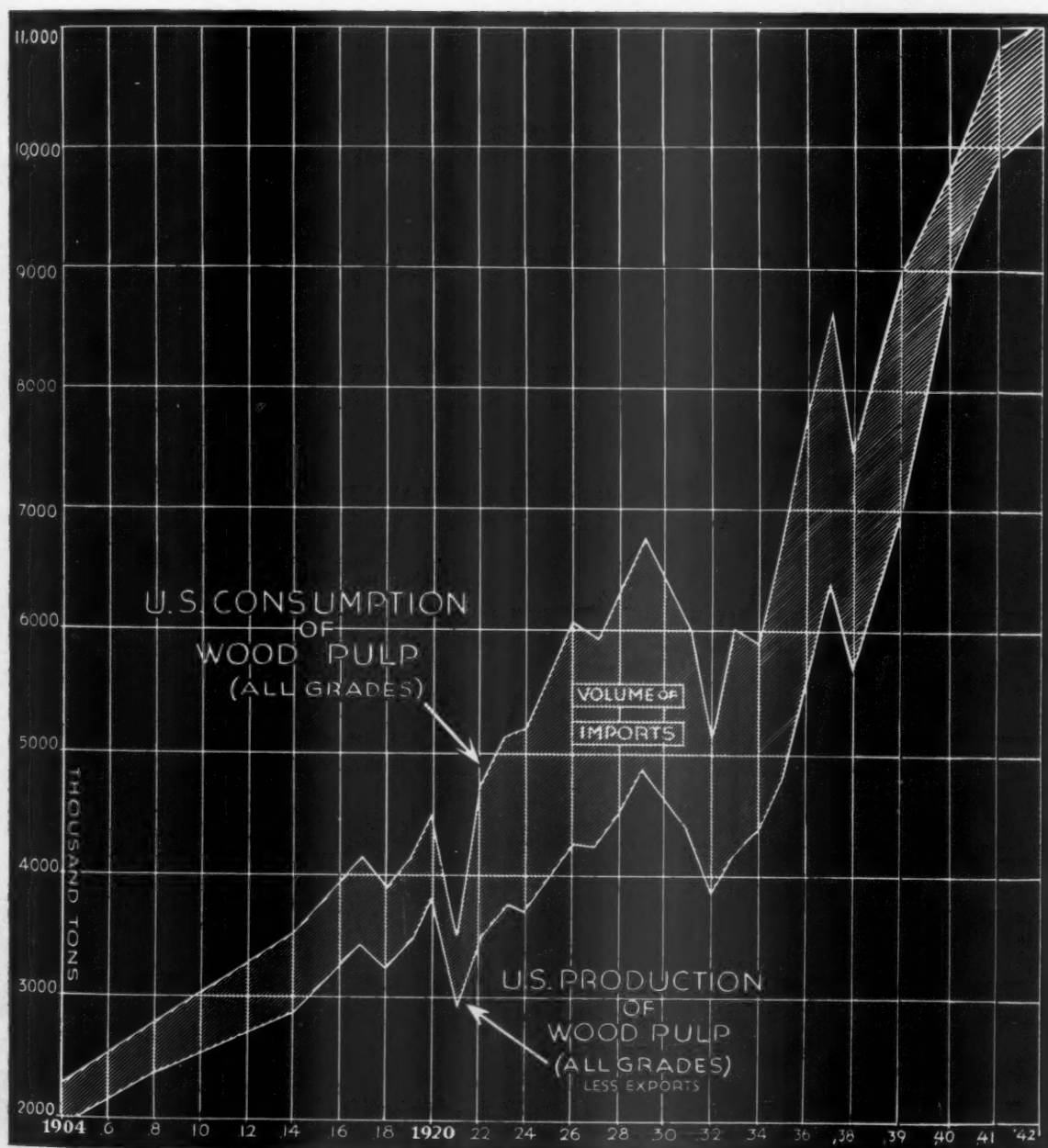
of essential papers and paperboards was the manpower problem. It was particularly serious in the kraft mills of the South. As this issue went to press, the Pulp and Paper Division of the WPB announced certain unbleached kraft pulp inventories were re-allocated among paper mills to assure the continued operation of all mills during May and a minimum 20-day inventory as of June 1.

#### Restrictions Imposed

In order to keep up the essential production, a mild freeze was placed on the industry on November 1, 1942. Both the United States and

Canada restricted paper and paperboard production to the operating level of the six months from April 1 to September 30, 1942. It prohibited paper and paperboard production in any mill which had not produced these materials prior to August 1.

Not affected by the freeze were building papers, building boards, vulcanizing fiber stock, resin impregnating stock, sanitary napkins and hospital wadding stock. During 1943 there have been more restrictive measures taken, reducing production of all kinds of paper and paper-



# *Quality Sulphite Pulp*

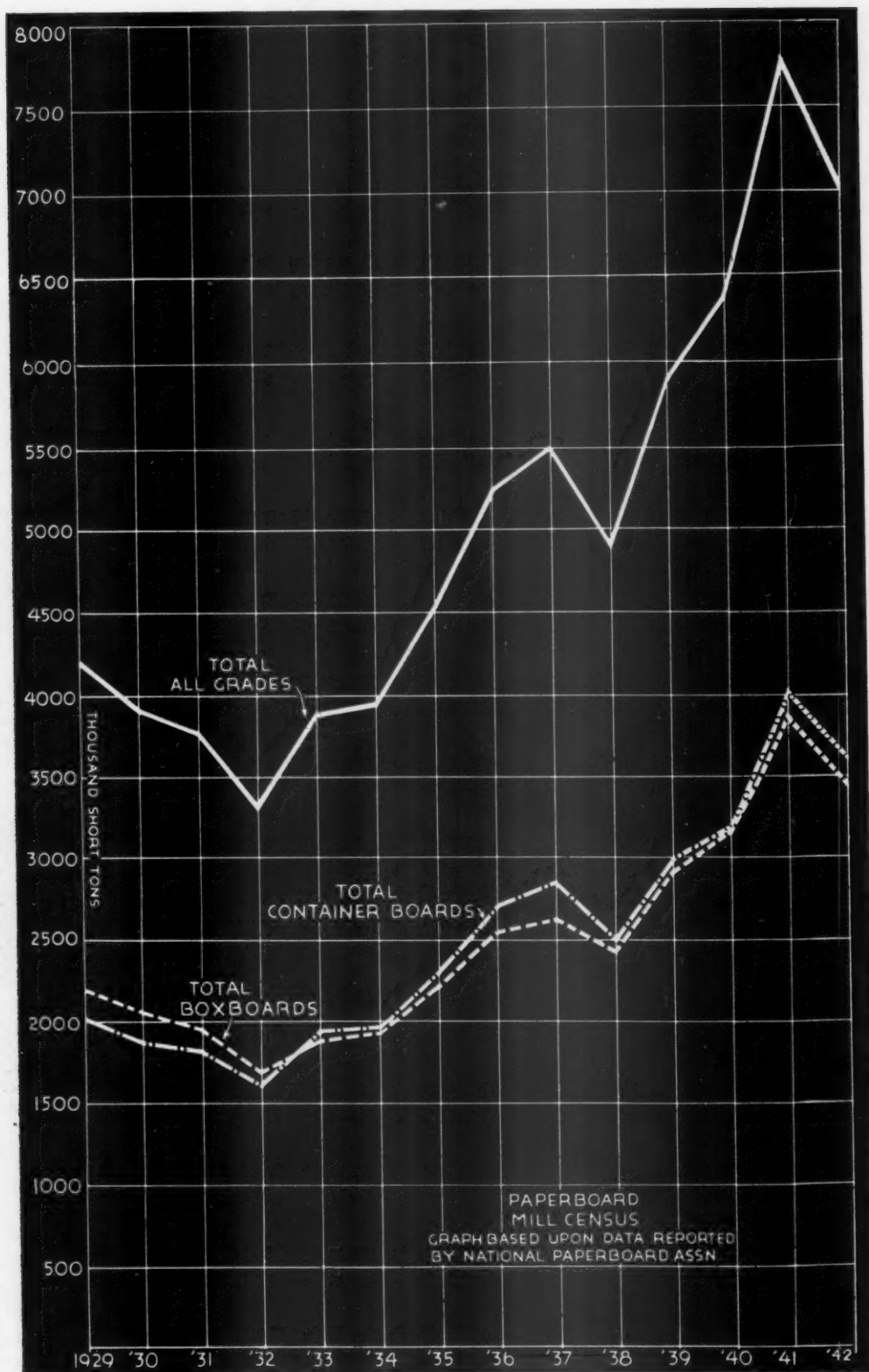


DOMESTIC  
*and*  
EXPORT  
SHIPMENTS

Annual Capacity 175,000 Tons

**PUGET SOUND PULP & TIMBER CO.**  
*Bellinham Washington*





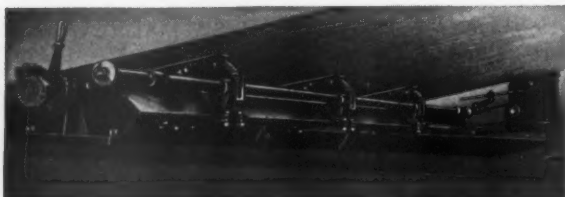
# YOUR BIRD MACHINERY IS PARTICULARLY EFFECTIVE, NOW *Make the Most of It!*



**BIRD SCREENS** are the last and strongest barrier against the increased dirt occurring in today's paper stock. Make sure yours are installed and operating to best advantage and keep them in first class shape. Check with us if you have any question of Screen performance or maintenance.



**BIRD SAVE-ALLS** help you to turn every pound of good stock into paper instead of into the sewer. They perform this vital conservation job at lowest net cost. Keep them in shape to do their best. Consult us if there's any question about it.



**VICKERY FELT CONDITIONERS** prevent unwelcome and costly paper machine shut-downs by keeping press felts continuously clean and open. See that they're working at top efficiency at all times. If you're not sure, get in touch with us.



**VICKERY DOCTORS** are capable of keeping every papermaking roll in shape to do its best work. To assure maximum production, fewer breaks and longer roll service be sure your Doctors are properly installed, operated and maintained. Ask us if there's the slightest doubt about it.

*Up to our necks in war work as we are—and as you would want us to be—we cannot visit our friends on the Pacific Coast as often as we'd like. But we want you to know that we stand ready to help you in any way that we can, now, as always.*

**BIRD MACHINE COMPANY**  
SOUTH WALPOLE • MASSACHUSETTS

board to designated percentages of previous production.

But meanwhile one of the most interesting manufacturing developments of the warring nation has been the new uses found for paper. Paper rings for bombs have proved superior to steel. Paper covering is provided shells and delicate parts of airplanes for shipment. Paper cartons are tossed overboard in the South Seas, to float, impervious to water, to an American-held beach-head.

Tough, weather-proof paperboard boxes package foods for fighting men and for lend-lease. New paper cartons are perfected for beverages, oils, paints, chemicals, tobacco, etc. Paperboard filing cabinets, desk trays, waste baskets, fruit boxes, etc. have been made. Multiwall paper bags are making up for lack of burlap. They are used to pack cement, gypsum, etc.

Glassine laminated paperboards, a recent development, is one substitute for metal, glass and even wood containers. Dehydrated eggs are packed in a small, moisture proof folding carton which holds the egg powder from a dozen eggs.

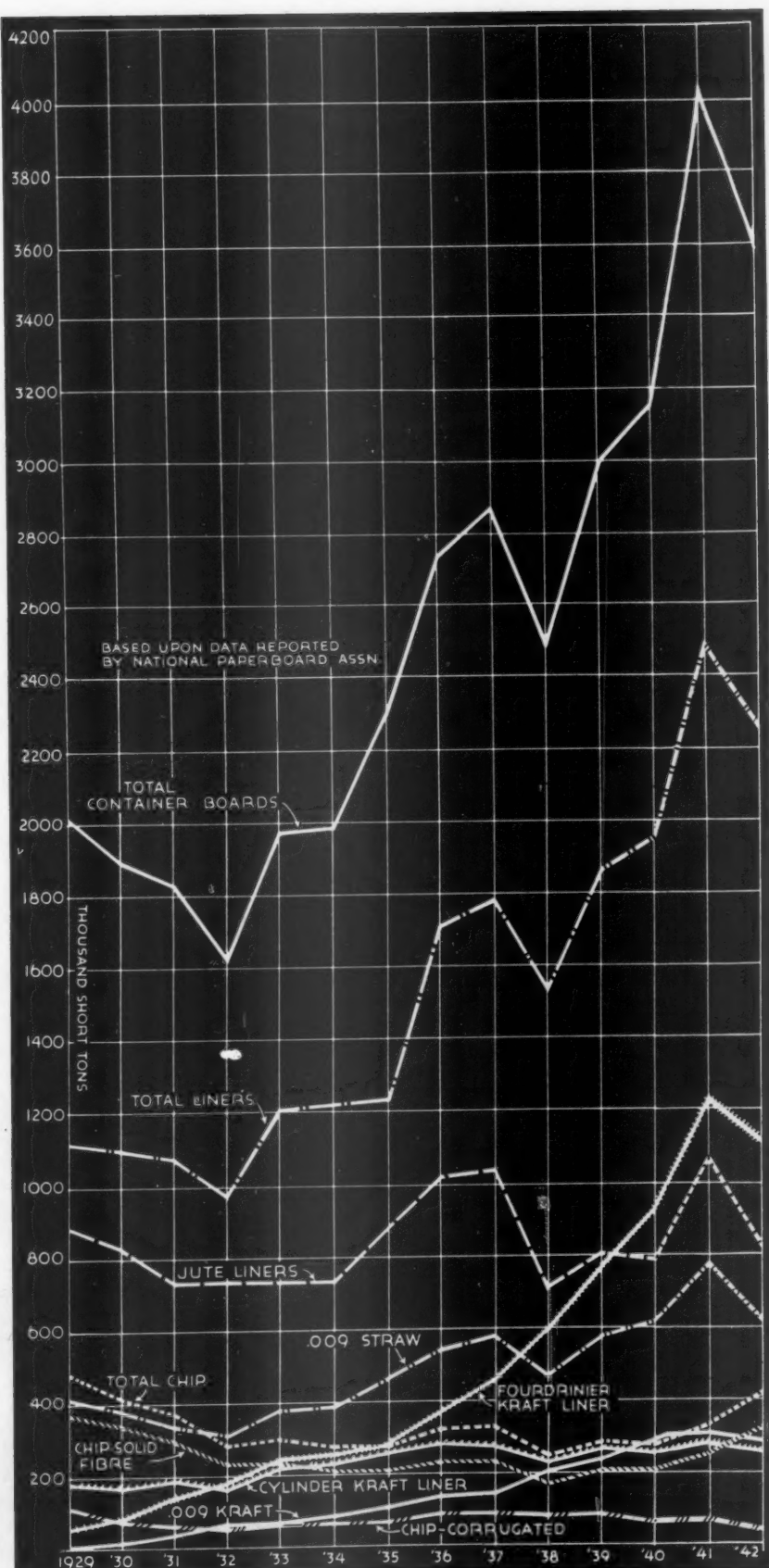
DuPont's Cellophane, made entirely from wood pulp, wraps compressed and dehydrated foods, saving steel and tin. A whole meal—soya bean soup, meat loaf, mashed potatoes, carrots, beet salad, custard pie and milk—was served recently at a luncheon in Washington, prepared entirely from these foods. It was a luncheon in honor of the second anniversary of the lend-lease act.

#### Exhibit Demonstrates Need

Proof that paper and paperboard is essential in war as in peace was demonstrated in the exhibit last February in New York organized by TAPPI. Ammunition and ration containers, camouflage nets, ordnance protective wrappers and containers, Chemical Warfare service items and projectile containers were sent by the War Department and other exhibitors for display.

Other products on display, which save shipping weight and space and conserve metals, were:

Airplane parts fabricated from paper laminate, a newly developed product; paperboard drums, replacing 54-gallon steel drums; paper and paperboard containers with various





**BOOKS**  
*help win the war!*

**TONS UPON TONS  
OF PAPER  
NEEDED FOR  
MILITARY AND  
TECHNICAL BOOKS**

Technical books for millions. Paper machines running constantly. Printing presses operating day and night to meet the demand. Sales reaching giant proportions. Technical books outselling popular best sellers. All the result of the war demand for information on new jobs in military and industrial work. Yes, bookdealers everywhere are reporting millions of new buyers among war workers, men in the service and those who are preparing to qualify themselves for these activities.

Here is another example of how paper is greatly contributing to the winning of the war. So vital is the need for this technical information, authorities state that it is not likely manufacturers of book paper will be asked to reduce their output.

And paper is doing its part in a thousand other ways in the war program. That is why paper making equipment must be kept running. For paper is vital to victory.

Pacific Coast Rep.: Pacific Coast Supply Co., San Francisco, Portland, Ore.

# Jones

**E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.**  
Builders of Quality Machinery for Paper Mills

designs of closures, replacing metal tooth powder, spice, drug, and cosmetic containers; paper folding boxes with individual compartments for small arms ammunition; folding paper boxes with insert bags for powdered milk, eggs, etc.; containers for tobacco products, replacing metal; integrated paper lunch-tray sets for war plants; waterproof, water vaporproof, grease and oilproof paper bags, boxes, and wrappers; and paper-base plastic machine parts.

Paper and paperboard manufacturers on the Pacific Coast are doing an important share in developing new types of products. At a Pacific Coast mill, "victory box" containers are being made which hold together after 24 hours of soaking and, filled with canned foods, withstand being dropped on their edges on a concrete floor six times from a height of 30 inches.

These west coast manufacturers say a decade of normal expansion and development has been crowded into a year and a half of war. With costs a secondary factor, in some cases, paper production has moved into many fields where it might never have ventured under normal conditions. Once in production, the cost of the new products are rapidly being pulled down. When the war ends, many will have reached a price level fully competitive with the products they are replacing.

### Another War Essential

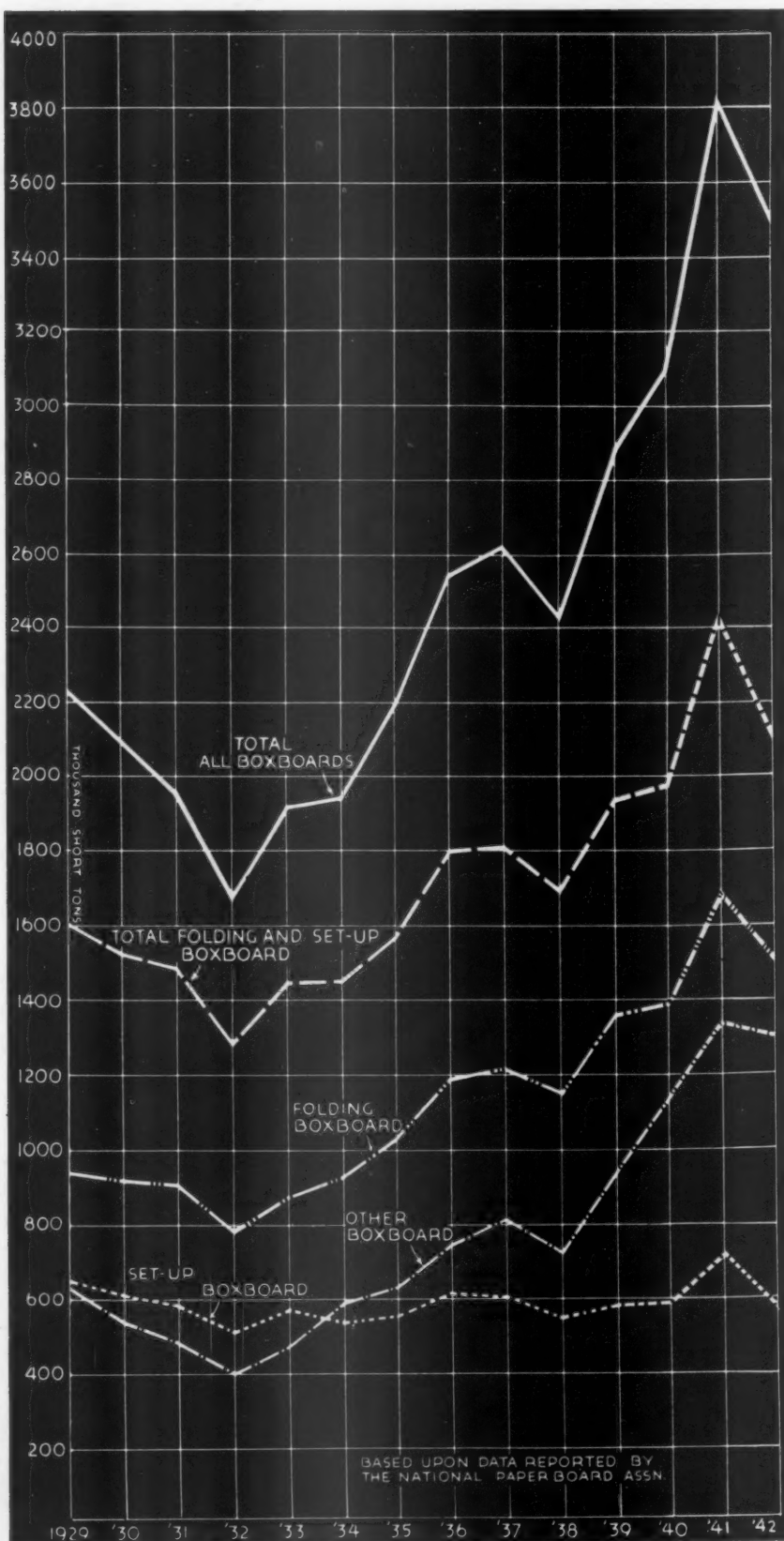
A. E. Giegengack, public printer of the United States, reveals that safety paper bought for ration books up to the present time is sufficient to run a 16-inch web  $4\frac{1}{2}$  times around the earth.

### Baked Beans Now Packed In Cellophane

● Cellophane is helping to save the day for one of America's most popular canned foods—Boston baked beans, according to Du Pont.

Because of the tin and steel shortage, baked beans in cans have been ruled out. However, a Boston firm is now supplying baked beans, in quick-frozen form, wrapped in a cellophane bag which is in turn placed in a cylindrical paperboard container.

The beans are packed at a temperature of 190 degrees F. and then cooled for two hours before freezing. The production of the new frozen food has reached a volume of 40,000 pounds a week and is expected to double this figure very soon. Judging from the very favorable reaction, frozen baked beans may remain a popular item after the war. They are easy to open and require only a few minutes heating to prepare for the table.



**UNITED STATES**  
**Paperboard—Operation, Production, Orders<sup>1</sup>**  
 (.012 of an inch or more in thickness)

Year and Month—1942	—Operation—(Inch hours <sup>2</sup> )— (Based on last dryer width)			—Production—(Short tons)—			New orders (Short tons)	Unfilled orders and month (Short tons)
	Rated Capacity	Operated	Per Cent of Capacity	Rated Capacity	Output	Per Cent of Capacity		
January	16,918,116	16,794,906	99.3	599,541	580,059	96.8	581,502	406,348
February	15,686,933	15,688,842	100.0	540,960	530,609	98.1	508,272	389,700
March	17,076,710	16,979,623	99.4	586,040	577,942	98.6	542,432	349,434
April	17,236,302	16,174,266	93.8	586,060	550,653	94.0	495,547	297,904
May	17,497,484	14,412,874	82.4	586,170	491,390	83.8	428,778	228,701
June	17,612,648	12,278,712	69.7	587,590	425,175	72.4	379,375	183,985
July	18,167,024	11,864,235	65.3	610,632	401,333	65.7	393,968	170,545
August	17,731,428	12,771,541	72.0	568,016	430,286	73.2	423,399	170,273
September	17,426,660	12,856,990	73.8	587,184	433,742	73.9	444,131	184,251
October	17,702,379	14,267,484	80.6	605,304	485,755	80.2	519,306	207,542
November	16,339,843	13,020,967	79.7	557,679	434,704	77.9	482,582	249,347
December	16,507,703	13,867,134	84.0	602,210	458,808	76.2	497,109	293,777
Total (Year 1942)	205,903,230	170,977,574	83.0	7,037,386	5,800,456	82.4	5,696,401	—
Total (Year 1941)	208,851,139	181,648,073	87.0	6,830,102	6,142,290	89.9	6,536,701	—
Total (Year 1940)	222,951,990	159,269,644	71.4	7,079,959	5,175,107	73.1	5,112,272	—
Total (Year 1939)	224,509,968	156,009,731	69.5	6,842,087	4,882,636	71.4	4,984,774	—
Total (Year 1938)	201,659,468	125,473,369	62.2	6,188,954	3,816,502	61.7	3,827,460	—
Total (Year 1937)	193,449,553	143,747,844	74.3	5,648,035	4,293,717	76.0	4,163,060	—
Total (Year 1936)	176,217,757	129,343,411	73.4	5,001,147	3,658,871	73.2	3,720,996	—
Total (Year 1935)	178,529,564	119,579,631	67.0	4,861,628	2,294,055	67.8	3,281,525	—
Total (Year 1934)	176,800,951	105,201,235	59.5	4,767,029	2,839,705	59.6	2,807,470	—
Total (Year 1933)	165,594,126	105,986,270	64.0	4,619,730	2,912,374	63.0	2,913,370	—
Total (Year 1932)	138,115,824	75,979,629	55.0	3,904,824	2,152,045	55.1	2,148,991	—
Total (Year 1931)	137,218,968	91,894,961	67.0	3,879,836	2,556,851	65.9	2,527,024	—
Total (Year 1930)	139,179,840	96,843,592	69.6	3,917,436	2,699,595	68.9	2,685,373	—

<sup>1</sup>Monthly statistics compiled from data furnished by the National Paperboard Association from reports of members, and by manufacturers reporting direct to the Bureau of Census, are presented in the above tables. These statistics were released by Director J. C. Capt, Bureau of the Census, Department of Commerce.

<sup>2</sup>Rated (24-hour) capacity data for paperboard machines in inch hours in this report are based on last dryer width whereas those shown in the reports for 1932 and earlier years were based on maximum trim width. The capacity data vary according to the normal number of working days in each month.

**PAPERBOARD PRODUCTION BY ZONES**  
**1942**  
 Short Tons

Zone.	Linters	Corr. Material	Chips	Folding Boxboard	Set-Up Boxboard	Other	Total
New England	50,300	7,900	16,300	177,400	59,300	109,000	420,200
Middle Atlantic	438,100	170,600	289,300	442,100	339,900	396,800	1,876,800
Lake States	449,600	337,200	177,500	717,500	136,400	546,900	2,365,100
South	1,113,000	322,900	21,400	61,300	26,800	179,300	1,724,700
Western	214,300	85,500	103,800	142,100	26,900	114,800	687,400
Total	2,265,300	924,100*	408,300	1,540,400	589,300	1,346,800	7,074,200*

\*In addition, Canadian Imports of Corrugated Materials were 42,100 tons.

Western Group includes all states west of Mississippi River with the exception of Texas, which is included in the Southern Group.  
 Source: National Paperboard Association.

**PAPERBOARD PRODUCTION BY ZONES**  
**1941**  
 Short Tons

Zone.	Linters	Corr. Material	Chip	Folding Boxboard	Set-Up Boxboard	Other	Total
New England	39,300	12,600	9,500	222,600	59,100	128,500	471,600
Middle Atlantic	550,200	222,300	74,700	484,100	419,700	429,200	2,180,200
Lake States	617,800	438,900	173,500	810,000	164,700	508,400	2,713,300
South	1,141,000	350,400	20,400	59,300	29,800	180,400	1,781,300
Western	212,600	107,700	72,800	154,500	32,700	104,500	684,800
Total	2,560,900	1,131,900*	350,900	1,730,500	706,000	1,351,00	7,831,200*

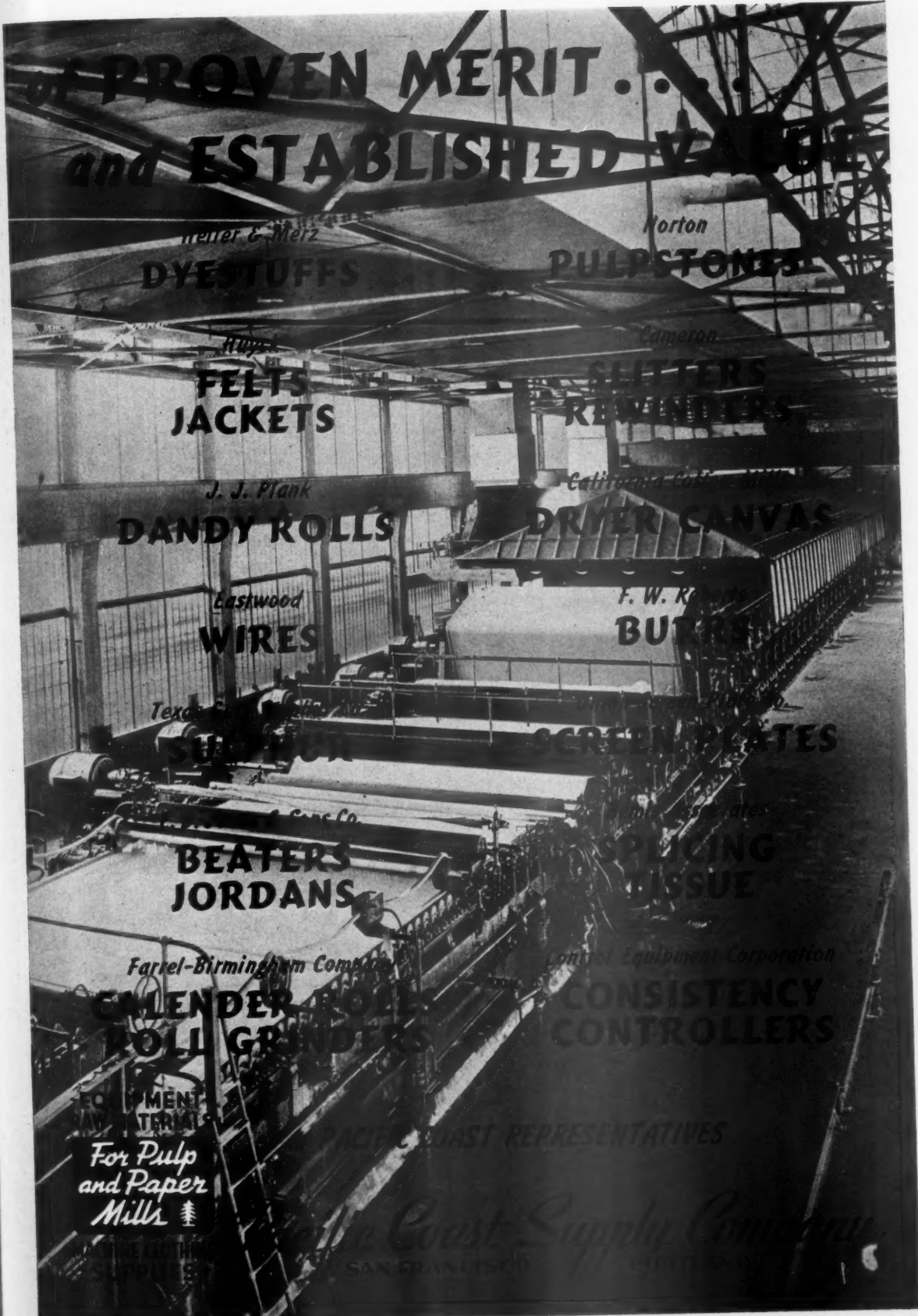
\*In addition, Canadian Imports of Corrugating Material were 106,200 tons.

Western Group includes all states west of Mississippi River with the exception of Texas, which is included in the Southern Group.  
 Source: National Paperboard Association.



MAY • 1943

75



**PROVEN MERIT...  
and ESTABLISHED VALUE**

*Heiter & Merz*  
**DYESTUFFS**

*Norton*  
**PULPSTONES**

*Hunter*  
**FELTS  
JACKETS**

*Cameron*  
**SLITTERS  
REWINDERS**

*J. J. Plank*  
**DANDY ROLLS**

*California Cotton Mills*  
**DRYER CANVAS**

*Eastwood*  
**WIRES**

*F. W. Roberts*  
**BUFFERS**

*Texas*  
**SCREENS**

*California Paper & Pulp Co.*  
**BEATERS  
JORDANS**

*Consistency Equipment Corporation*  
**CONSISTENCY  
CONTROLLERS**

*Farrel-Birmingham Company*  
**CALENDER ROLLS  
ROLL GRINDERS**

*For Pulp  
and Paper  
Mills*

*Pacific Coast Representatives*  
**Pacific Coast Supply Company**  
SAN FRANCISCO

### Drug Makers Conserve Paper and Board

● Recommendations for saving paper and paperboard were made by the Pharmaceutical Manufacturers Industry Advisory Committee at a meeting in Washington.

After hearing reports from a sub-committee on conservation of packaging materials, the members urged consideration of increasing the number of units in carrier cartons as well as the number of carrier cartons or packers in a shipping case.

While pointing out that drug manufacturers generally re-use shipping cases for bottles received from the bottle producers, they suggested that the entire industry follow this practice. They also urged the full re-use of shipping containers by wholesalers.

The committee also recommended discontinuing the custom of wrapping bottles by pharmaceutical manufacturers. It was suggested that where protection is needed for labels, a band or "sleeve" be used instead of wrapping the entire bottle, or that some protective coating be used on the label. Transparent wrappings for bottles are becoming critical.

Recommendations will be made by the committee at a later meeting on the caliber of paperboard to be used in different size paper cartons, and also on set-up boxes used for vitamins and other products.

### UNITED STATES

#### WOODPULP PRODUCTION CLASSIFIED BY PROCESS: 1941 AND 1940 [Tons of 2,000 pounds]

Process	1941	1940	
		New basis <sup>1</sup>	Comparable with previous years <sup>2</sup>
All processes.....	10,200,728	8,959,553	8,861,740
Mechanical, total.....	1,925,284	1,808,256	1,762,821
Sulphite fiber, total.....	2,918,780	2,607,789	2,541,684
Unbleached.....	1,215,649	995,700	990,668
Bleached.....	1,703,131	1,612,089	1,601,016
Sulphate fiber, total.....	4,394,338	3,747,992	3,726,126
Unbleached.....	3,708,308	3,163,378	3,166,263
Semi-bleached.....	163,915	131,332	(3)
Bleached.....	522,117	453,282	568,872
Soda fiber, bleached and unbleached.....	617,012	532,387	548,047
Semi-chemical, off-quality, screenings, and miscellaneous.....	345,312	263,135	224,953

(1) - The data on wood pulp production cover all known producers, and are for 207 mills in 1941 and for 205 mills for "new basis" 1940. The increase in 1941 was the result of two new plants coming into operation. Statistics for earlier years published by the Bureau of the Census cover only 199 mills. In order to provide over-lapping data, statistics for the 199 mills are given for the year 1940 under the heading "comparable with previous years." The six mills which were added manufacture products not previously classified as wood pulp.

(2) - Source: Department of Commerce, Bureau of the Census--census for Forest Products: 1940.

(3) - Combined with "bleached."

### PAPERBOARD MILL CENSUS

#### In Tons

##### CONTAINER BOARDS

GRADES	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Liners - Jute	735,100	737,300	888,700	1,029,300	1,047,600	574,900	754,300	796,400	1,073,900	814,200
Liners-Kraft Cyl.	227,000	232,900	262,600	285,900	290,800	238,900	279,800	246,200	285,600	276,800
Kraft Four.	252,300	257,700	289,600	389,600	461,600	638,200	803,800	923,300	1,201,400	1,174,300
Total Kraft	479,300	490,600	552,200	675,500	752,400	877,100	1,083,600	1,169,500	1,487,000	1,451,100
Total Liners	1,214,400	1,227,900	1,440,900	1,704,800	1,800,000	1,552,000	1,877,900	1,965,900	2,560,900	2,265,300
Chip-Corrugating	61,700	66,100	70,200	97,700	96,200	76,500	75,900	75,500	77,800	72,200
Solid Fibre	242,900	209,100	210,700	237,000	246,800	177,800	208,600	202,800	273,100	336,100
Total Chip	304,600	275,200	280,900	334,700	343,000	254,300	284,500	278,300	350,900	408,300
.009 Straw, Etc.	386,200	394,000	472,800	556,800	589,200	461,400	574,900	611,400	783,608	615,200
.009 Kraft	73,700	89,000	114,400	141,900	148,300	212,100	263,000	292,000	348,300	308,900
Total .009	459,900	483,000	587,200	698,700	737,500	673,500	837,900	903,400	1,131,900	924,100
TOTAL	1,978,900	1,986,100	2,309,000	2,738,200	2,880,500	2,479,800	3,000,300	3,147,600	4,043,700	3,597,700

##### BOXBOARDS

Folding Box	883,600	926,800	1,034,600	1,198,400	1,223,800	1,150,400	1,370,700	1,398,500	1,730,500	1,540,400
Set-up Box	551,700	506,000	531,100	587,700	570,000	518,800	585,700	520,500	706,000	589,300
Total	1,435,300	1,432,800	1,565,700	1,786,100	1,793,800	1,669,200	1,956,400	1,919,000	2,436,500	2,129,700
Other	490,000	510,700	642,800	770,900	839,200	753,600	947,600	1,137,800	1,351,000	1,346,800
TOTAL	1,925,300	1,943,500	2,208,500	2,557,000	2,633,000	2,422,800	2,904,000	3,126,800	3,787,500	3,476,500

##### SUMMARY

JUTE, Chip, Boxboard Straw, Etc.	3,322,500	3,301,900	3,789,300	4,416,800	4,534,700	3,740,900	4,430,800	4,589,300	5,819,200	5,107,000
KRAFT, Liner, .009 Etc.	581,700	627,700	728,200	878,400	978,800	1,161,700	1,473,500	1,685,100	2,012,000	1,967,200
TOTAL ALL GRADES	3,904,200	3,929,600	4,517,500	5,295,200	5,513,500	4,902,600	5,904,300	6,274,400	7,831,200	7,074,200

Issued: March 25, 1943

\* In addition, Canadian Imports of Corrugating Material were 106,200 42,100

NATIONAL PAPERBOARD ASSOCIATION

## Pulp and Paper Normally Is 6th U. S. Industry

• The pulp and paper industry in normal times is the sixth leading manufacturing industry in the United States, from the standpoint of value added by manufacture, according to The Conference Board Industry Record, published in 1942 by the National Industrial Conference Board, Inc.

It based its ranking on data from 1939 records, the latest year available and during which most of the world was at peace until the last months of that year.

The pulp and paper industry was out-ranked only by the automobile, steel, newspaper publishing, baking and petroleum industries. Value added by manufacture in 1939 amounted to \$483,000,000. The industry consisted of 832 establishments, employing 137,445 wage earners and paying aggregate wages of \$176,000,000 according to this report. Including converted paper products, the industry in 1939 consisted of 3,279 establishments with 264,716 wage earners paid \$310,000,000. Value added by manufacture for this larger group of producers totaled \$870,000,000., as compared with \$800,000,000 in 1929 and only \$90,000,000 at the beginning of the century.

From the standpoint of total invested capital (total assets, less investments), the paper and pulp industry ranked seventh among major groups of manufacturing industries in 1939. Total capital, according to a compilation by The Conference Board, amounted to \$1,748,000,000, equal to 3.7 per cent of the capital of all manufacturing companies. On the basis of capital invested relative to the number of wage earners, the industry ranked second in 1939, and it also held this position in terms of capital invested for each dollar of wages paid. For each wage earner employed, invested capital amounted to \$7,367 as compared with an average of \$6,047 for all manufacturing.

### Conserving Truck Time

• The truck loading platform adjacent to the bag warehouse at the St. Helens Pulp and Paper Company mill at St. Helens, Ore., has been enlarged so that four trucks can now load at one time.

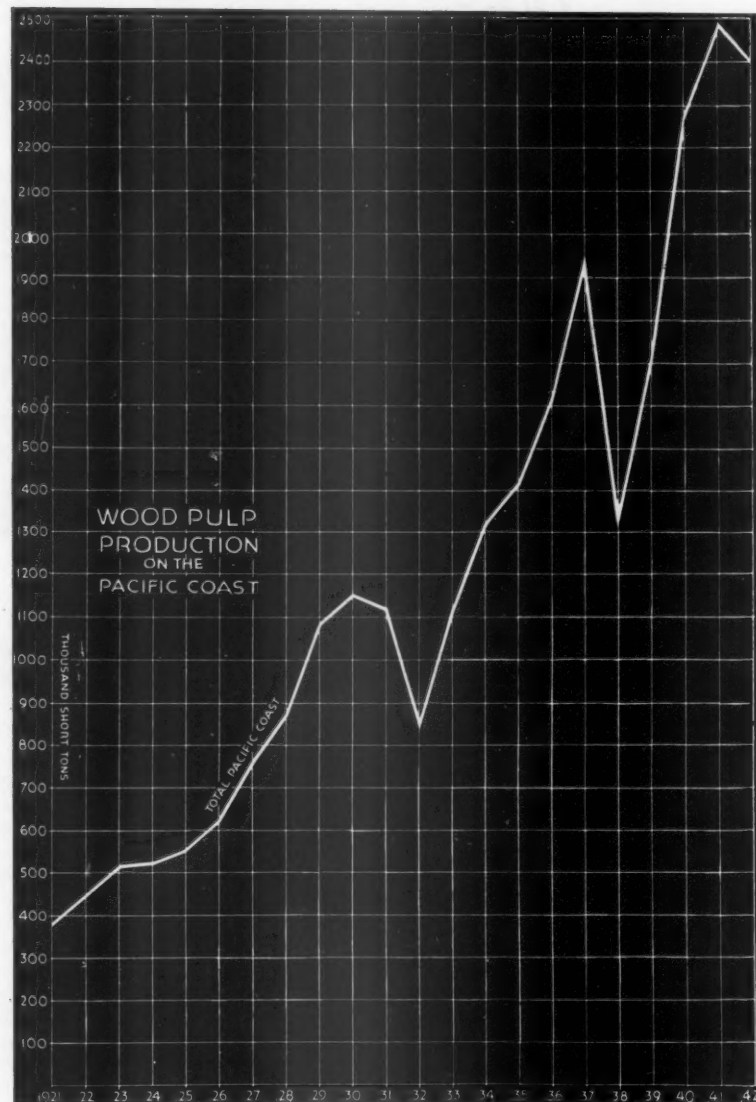
Formerly only permitting one truck to be loaded at one time, the improvement conserves truck time and manpower.

## Would Declare Industry "Essential"

A congressional investigating committee during the past month recommended that the paper production industry be

declared "essential" to the war effort and that the federal government eliminate its own "waste" of the product.

The recommendations were contained in a report by a House Interstate Commerce subcommittee.



### PACIFIC COAST STATES

and British Columbia  
Paper and Paperboard Production  
(Tons 2,000 lbs.)

State—	1935	1936	1937	1938	1939	1940	1941
Washington	465,708	506,579	546,227	472,185	552,577	600,180	681,017
Oregon	242,085	262,478	273,630	234,879	260,402	310,870	334,645
California	221,763	265,662	278,650	242,533	294,846	329,082	381,985
British Columbia	299,816	320,555	320,920	222,305	272,117	330,572	351,453
Total Coast Production	1,229,372	1,355,274	1,419,427	1,171,902	1,379,942	1,591,585	1,749,100

Bureau of the Census, Dept. of Commerce. British Columbia figures from the Dept. of Lands, Forest Branch.





## *When the Peace is Won*



Industry should recognize that it has both a big job and a big stake in the post-war transition to production for peace . . . The manner in which industry handles this change will be vital in its influence on our return to, and the strengthening of our democratic forms . . . **TOO LITTLE THINKING** and **TOO LATE PLANNING** may very easily rob us of the fruits of victory . . . We at **EVERETT**, realize our responsibilities and the burden that must be carried . . . We are planning even now, for the return of freedom of action that formerly governed our relations with customers . . . planning for free interchange of commerce, unhampered by restrictions imposed by the necessities of war . . . When that time has come you are assured a swift return to the kind of service to which you have been accustomed for over fifty years . . . The service that built the slogan "**RELY ON EVERETT.**"



An Advertisement of

**EVERETT PULP & PAPER CO.** EVERETT, WASHINGTON • SAN FRANCISCO • LOS ANGELES  
MEXICO • CENTRAL AMERICA • SOUTH AMERICA • HONOLULU • NEW ZEALAND • AUSTRALIA

## Use of Newsprint Continues Heavy Despite Wartime Restrictions

● Newsprint production in North America in 1942 was quite high, considering that the entire continent was becoming increasingly involved in the World War.

Involvement in global warfare brought less restriction on manufacturers of newsprint than on the manufacturers of many other commodities and products. Despite many dire forecasts, restrictions on newsprint have not been as great as some "experts" had foretold.

According to the annual report of Royal S. Kellogg, secretary of the News Print Service Bureau, continental newsprint production was 378,000 tons less in 1942 than in the preceding year.

But 1941's production of 4,786,000 is generally considered a true all-time high record, although it was actually 158,000 tons less than the output of 1937. The 1937 record was recognized as unrelated to consumption, because much of it went to increase publishers' stocks. Even in wartime, the 1942 production was slightly above the one-year average for 1937-38 of 4,329,000 tons.

The falling off in newsprint consumption in North America was less than the reduction in the size of

### 1943 Prediction

Donald M. Nelson, chairman of the War Production Board, said on May 10 that no further restriction on the use of newsprint and print paper by newspapers and magazines "are in prospect" before October 1, 1943 "unless the newspapers fail to achieve" the ten per cent reduction already ordered.

Beyond October 1, Mr. Nelson said, "it is impossible to forecast what action will be necessary."

To some observers, who point out that many newspapers have been hedging on the original 10 per cent cut, Mr. Nelson's "unless" looms big and ominous.

newspapers caused by smaller advertising volume. This was because world-shaking events kept newspaper circulations at all-time high levels.

### Production

Production of newsprint paper in North America in 1942 was 4,407,000 tons, a decrease of 7.9 per cent from the output in 1941, said Mr. Kellogg. But the 1941 production was the largest in any normal year. The ten-year average production—1933 to 1942—was 4,237,000 tons, so the current record stands up well in comparison.

The continental supply of newsprint last year was, in round numbers, made to the extent of 72 per cent or 3,177,000 tons in Canada, 22 per cent or 953,000

tons in the United States and 277,000 tons or 6 per cent in Newfoundland. The decrease from the preceding year was 7 per cent in Canada, 6 per cent in the United States and nearly 20 per cent in Newfoundland. The latter, of course, was the direct result of the hazards and difficulties of ocean shipping.

Canadian newsprint production in 1942 was 107 per cent of the ten-year average, the United States production 101 per cent, and the Newfoundland production 88 per cent, which as previously noted, is a good record under war conditions.

The 4,407,000 tons of newsprint run off from North American machines last year was about 75 per cent of the present generally assumed industry capacity of 5,840,000 tons yearly.

Shipments during the year exceeded production by 32,000 tons, so that mill stocks in the three countries which totaled 200,000 tons at the end of 1941 were reduced to 168,000 tons on December 31, 1942.

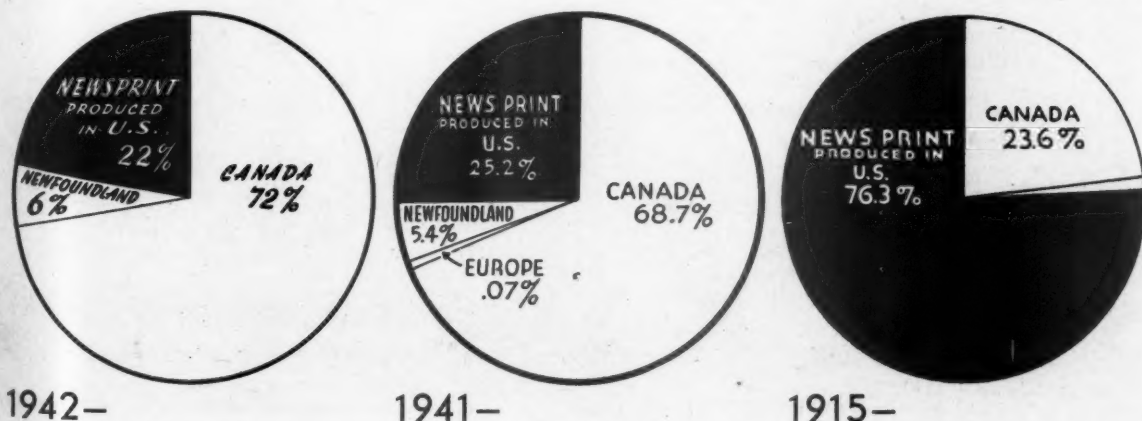
### Exports

Regarding the United States, Canada and Newfoundland as an economic unit in newsprint—as they now are officially and have been for many years unofficially—a combination of industry and government reports indicates that overseas exports were 314,000 tons in 1942, a decrease of 340,000 tons or 52 per cent from the corresponding figure of 1941. Ottawa official reports are that overseas shipments of newsprint from Canada last year were 213,000 tons, a decrease of 287,000 tons or 57 per cent

### U. S. Newsprint Industry's Share Of Domestic Market Continues to Decrease

United States newsprint mills supplied 22 per cent of the total newsprint available for consumption in the country in 1942 as compared with 25.2 per cent in 1941, 25.9 in 1940, 26.1 in 1939 and 27.3 in 1938. In 1915 they produced 76.3 per cent. Correspondingly, supplies from Canada and Newfoundland increased.

Each circle here represents the total amount of newsprint in the United States available for consumption in that year, with percentages supplied from domestic and foreign sources.

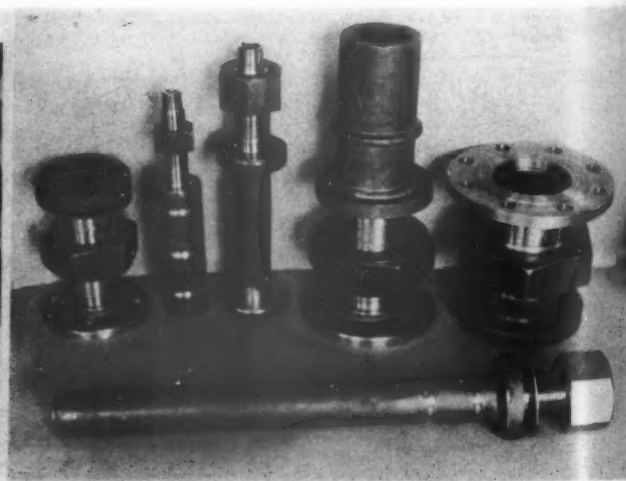
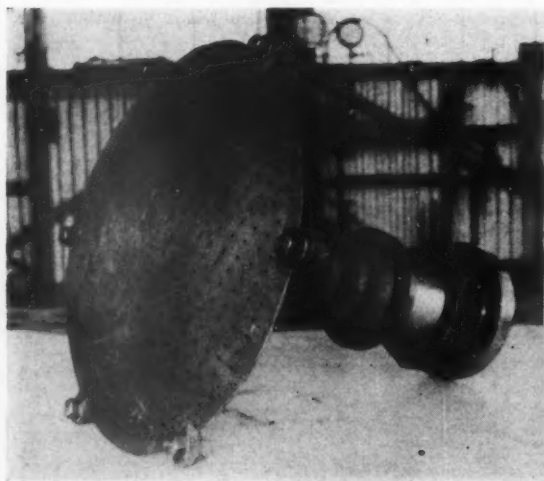




Sometimes the Navy makes  
it tough for the Pulp Mills but

**ESCO**

still serves both





from the 500,000 tons sent abroad in 1941. Overseas shipments from Newfoundland were 83,000 tons or a decrease of 35 per cent from the 129,000 tons so shipped in 1941. Exports from the United States, never of much consequence, were around 18,000 tons of newsprint in 1942 compared with 25,000 tons the preceding year.

### Consumption

Publishers reporting to the American Newspaper Publishers Association used 2,835,000 tons of newsprint in 1942, a decrease of 3.8 per cent from 1941. Since there is no way of ascertaining the exact amount of newsprint used by non-A.N.P.A. publishers nor by other publishers, it is not certain that the tonnage so used decreased the same percentage as that of the reporting publishers. Neither do we now have the United States reports of exports and imports for another check as was formerly the case. Under these circumstances, Mr. Kellogg estimates a consumption of 3,800,000 tons of newsprint in 1942, or 130,000 tons less than in 1941.

A consumption of 3,800,000 tons of newsprint was equivalent to 56.5 pounds per capita based upon an estimate of a population of 134,544,000 for continental United States as of July 1, 1942. This per capita of 56.5 pounds compares well with the average of 53.9 pounds for the decade 1933-42 inclusive.

A compilation has been made by Editor & Publisher of the circulation of English language dailies in the United States for the twelve months ended September 30, 1942, based upon required reports to the Post Office Department in Washington.

The combined circulation of morning, and Sunday newspapers for that period was 78,669,000 copies. This was 12 per cent above the 1929 record and 4 per cent above the previous high total of 75,516,000 reported in 1941.

### Outlook

The United States—the only large present market for newsprint paper in the world—entered 1943 with the prospect that the civilian economy will get only 33 per cent of the production of all kinds of goods in the country compared with 45 per cent in 1942 and 82 per cent in 1941, and this was true even with an industrial output more than double the 1935-39 average.

Already official action has constrained the publishers to a newsprint consumption at the 1941 rate and the operating ratio of the newsprint mills has been set at 10 per cent less than in the six months preceding March 31, 1942. These ordered reductions in consumption and production may be only an entering wedge for much greater restrictions as the war effort increases in intensity.

Newspaper fatalities in 1942 were the largest in any single year since World War I. A compilation by Editor & Publisher lists 68 dailies which ceased publication during the twelve months. Of these dailies 25 went on a weekly or semiweekly basis, 39 suspended permanently and 4 "for the duration."

It is impossible at this time to make a forecast of any value as to what the total newsprint consumption in the United States will reckon up to twelve months hence. If it is a long dreary war year, consumption will necessarily go down. If, as the optimists think, a big success comes in 1943, consumption will jump soon thereafter.

The only certainties facing the newsprint manufacturer in 1943 are those of greater manufacturing costs, smaller personnel, lower operating ratios and the highest taxes of all time. If he makes any money at all, he will be lucky.

### U. K. Newsprint Imports

Newsprint imports into the United Kingdom during 1942 totaled 65,892 tons. This figure is based on the figures for weekly imports furnished by the Newsprint Supply Co., says a British trade paper.

## SOURCES OF NEWSPRINT USED IN THE UNITED STATES

(Tons in Round Numbers)

Source: News Print Service Bureau

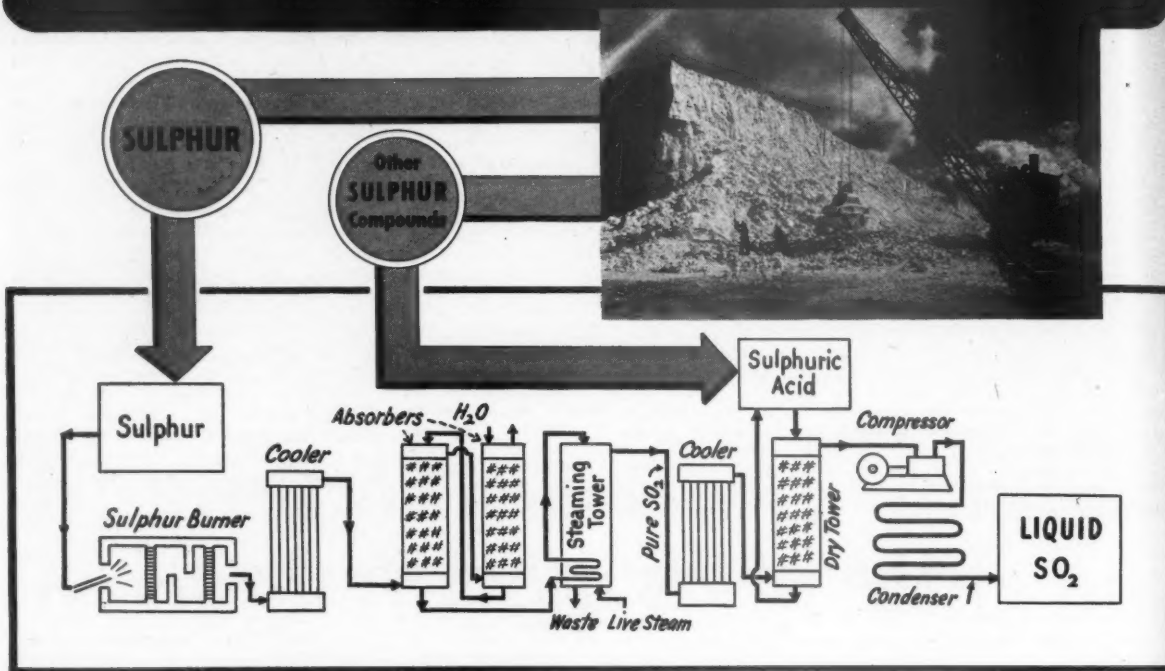
	U. S. Production	U. S. Exports	Canada	Imports into the U. S. From Newfoundland	Europe	Available for Consumption
1913	1,305,000	43,000	219,000*	-----	1,000	1,482,000
1914	1,313,000	61,000	310,000	-----	5,000	1,567,000
1915	1,239,000	55,000	367,000	-----	1,000	1,552,000
1916	1,315,000	76,000	468,000	-----	-----	1,707,000
1917	1,359,000	94,000	558,000	-----	1,000	1,824,000
1918	1,260,000	97,000	596,000	-----	-----	1,759,000
1919	1,375,000	111,000	628,000	-----	3,000	1,895,000
1920	1,512,000	49,000	679,000	1,000	50,000	2,193,000
1921	1,225,000	17,000	657,000	-----	135,000	2,000,000
1922	1,448,000	26,000	896,000	-----	133,000	2,451,000
1923	1,485,000	16,000	1,109,000	-----	200,000	2,778,000
1924	1,481,000	17,000	1,197,000	4,000	156,000	2,821,000
1925	1,530,000	23,000	1,295,000	20,000	133,000	2,955,000
1926	1,684,000	19,000	1,658,000	94,000	100,000	3,517,000
1927	1,486,000	12,000	1,776,000	89,000	122,000	3,461,000
1928	1,418,000	11,000	1,926,000	114,000	116,000	3,563,000
1929	1,392,000	19,000	2,195,000	132,000	96,000	3,796,000
1930	1,282,000	10,000	1,989,000	156,000	134,000	3,551,000
1931	1,157,000	10,000	1,754,000	160,000	151,000	3,212,000
1932	1,009,000	8,000	1,533,000	114,000	144,000	2,793,000
1933	946,000	11,000	1,545,000	95,000	153,000	2,728,000
1934	961,000	23,000	1,956,000	107,000	147,000	3,148,000
1935	912,000	23,000	2,062,000	124,000	197,000	3,272,000
1936	921,000	15,000	2,422,000	87,000	243,000	3,658,000
1937	946,000	17,000	2,899,000	124,000	294,000	4,246,000
1938	820,000	6,000	1,938,000	94,000	243,000	3,089,000
1939	954,259	13,000	2,206,000	104,600	310,000	3,561,859
1940	1,013,000	44,000*	2,586,000	157,000	34,000	3,746,000
1941**	1,058,000	73,000*	2,762,000	217,000	3,000	4,015,000
1942**	953,000	18,000	†	†	†	3,800,000

\*Includes paper which is not standard newsprint. Standard newsprint exports from the U. S. during 1940 did not exceed 15,000 tons; during 1941 the exports did not exceed 25,000 tons.

\*\*Figures estimated by the News Print Service Bureau.

†Figures not available due to war time measure.

# HOW SULPHUR SERVES INDUSTRY



## LIQUID SULPHUR DIOXIDE

Sulphur is burned to sulphur dioxide. The hot gases are cooled and pass into coke-packed absorbers down which trickles cold water. This absorbs the sulphur dioxide. The water solution is heated to boil off the sulphur dioxide which is then dried with concentrated sulphuric acid. The pure dry sulphur dioxide is compressed and liquefied.

Liquid sulphur dioxide is the refrigerant that keeps mechanical refrigerators cold. It is a solvent for oils and is used to extract impurities from lubricating oils. It is used to bleach wool, straw and textiles and in the manufacture of sugar. Sulphur dioxide also can be used in the preservation of foods.

~ ~ ~ Approximately 80% of all Sulphur

consumed in this country is burned to sulphur dioxide. And, the Texas Gulf Sulphur Company has ample supplies of Sulphur available for making all the sulphur dioxide needed by Industry whether for the production of liquid sulphur dioxide or for conversion to sulphuric acid or other Sulphur compounds so widely used in industry.

**TEXAS GULF SULPHUR CO.**  
 75 E. 45<sup>th</sup> Street New York City  
 Mines: Newgulf and Long Point, Texas

### Attractive Poster Points to Printing Need



● An attractive and timely poster with patriotic appeal is included in the series of one-sheets produced by Zellerbach Paper Company, San Francisco, to stimulate interest in printing.

The poster is attractively printed in colors, timely because it pictures Uncle Sam holding a ration book against a background of food products such as have made America point conscious and careful in the selection of foods, conservative in dealing out ration stamps.

The theme is "Printing Guarantees Fair Distribution."

Approximately 5,000 of these posters are being distributed for display by printing establishments served by Zellerbach Paper Co., and it has proved most popular of all the 1943 series.

### WOOD PULP PRICES IN U. S.

Year—	Domestic Bleached Soda	Foreign Bleached Sulphite	Foreign Strong Sulphite	Swedish Kraft	Domestic Bleached Sulphite
1928	\$80	\$68 — \$78	\$48 — \$55	\$50 — \$55	—
1929	75 — 80	68 — 77	50 — 56	47 — 50	—
1930	65 — 75	57 — 68	42 — 56	30 — 47	—
1931	45 — 65	43 — 57	32 — 43	28 — 31	—
1932	35 — 45	35 — 43	27 — 32	25 — 30	—
1933	35 — 60	35 — 57	27 — 43	25 — 37	\$40 — \$50
1934	55 — 60	55 —	42 —	33 — 38	50
1935	50 — 55	50 — 55	37 — 42	33 — 36	50
1936	50 — 53	50 — 65	38 — 50	36 — 50	50 — 54
1937	54 — 70	65 — 95	50 — 75	47 — 76	54 — 65
1938	60 — 50	90 — 50	70 — 36.50	47.50 — 31.50	58 — 51
1939	50	47.50 — 60	36 — 50	—	—
1940*	60 — 72.50	60 — 82.50	50 — 72.50	42.50 — 72.50	58 — 66
1941**	72.50	82.50 — 85	67.50 — 75	72.50 — 77.50	66
1942***	72.50 — 73.50	—	—	—	66

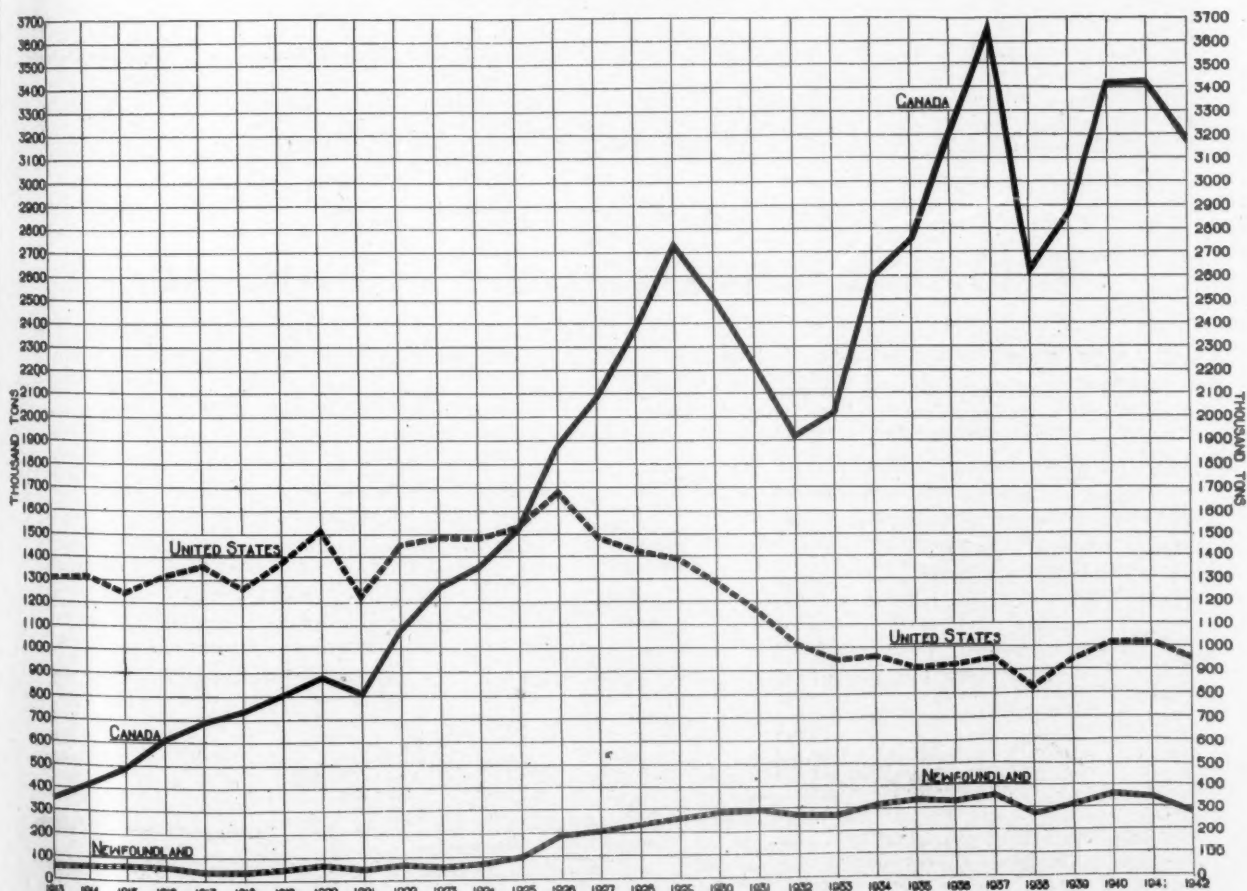
\*The price of domestic unbleached sulphite was \$50 per short ton ex dock Atlantic seaboard during the first quarter, \$52.50 during the second quarter and \$63.50 per ton during the third and fourth quarters.

\*\*The price of domestic unbleached sulphite was 63.50 per ton ex dock Atlantic seaboard during the entire year.

Foreign pulp prices quoted were for small remaining stocks available for sale or resale. \*\*\*The OPA on April 20th raised the price of domestic bleached sulphite from \$72.50 to \$73.50. The price of domestic bleached soda remained at \$66.00 throughout the year. The price of domestic unbleached sulphite was \$63.50 through the year as it had been in 1941.

### NEWS PRINT PRODUCTION 1913-1942

UNITED STATES—CANADA—NEWFOUNDLAND



News Print Service Bureau



## U. S. Pulp Imports And Exports Show Increase

Despite wartime obstacles, United States external trade in wood pulp increases  $\uparrow \uparrow \uparrow$  Imports from Canada increase to fill breach caused by lack of supplies from across Atlantic.

**A**LTHOUGH it was the United States' first full year in war, both imports and exports of wood pulp for 1942 showed slight increases, according to estimates made by the United States Pulp Producers Association.

Official figures were not available for 1942 or for part of 1941. The Department of Commerce ceased issuing reports on exports at the end of the first quarter in 1941 and on imports at the end of the third quarter of that year.

The Association estimates that total wood pulp—chemical and me-

chanical—importations into the United States in 1942 amounted to 1,200,000 short tons of 2,000 pounds, air dry weight, representing an increase of 55,000 tons, or 4.8 per cent, above an estimated total of 1,145,000 short tons of all grades imported in 1941. The 1941 figure is based on official U. S. Department of Commerce reports for the first nine months of that year and the Association's estimates for the final three months.

Estimate of last year's imports are apparently based on receipts of wood pulp from Canada and Newfound-

land, because, although official data are lacking, it is generally accepted within the trade that not a single ton of pulp came into the United States during the past year from any European country. Some limited tonnage is believed to have been received from Newfoundland, but by and large almost the sole source of wood pulp supply in 1942 was Canada.

Since no U. S. Department of Commerce statistics were available, it is not known what the declared values of pulp importations into this

### UNITED STATES WOOD PULP IMPORTS

Quantity and Value

	Chemical Pulp		Mechanical Pulp		Total Pulp	
	Short Tons	Value	Short Tons	Value	Short Tons	Value
1942		*988,000		*212,000		*1,200,000
1941 (12 months)		*941,000		*204,000		*1,145,000
1941 (9 months)	674,320	\$42,831,566	136,759	\$3,724,960	811,078	\$46,556,526
1940	1,053,660	55,481,017	170,909	4,712,649	1,224,569	60,193,666
1939	1,798,459	70,659,074	227,954	5,218,752	2,026,413	75,877,826
1938	1,551,917	69,181,811	170,470	3,592,369	1,722,387	72,774,180
1937	2,176,343	93,955,854	218,422	4,342,168	2,394,765	98,298,022
1936	2,050,051	78,839,776	227,778	4,051,224	2,277,829	82,891,000
1935	1,743,602	67,483,566	190,041	3,277,385	1,933,643	70,760,951

\*Estimated by U. S. Pulp Producers Association.

By Quantity in Long Tons

1922 - 1942

	Bleached Sulphite Long Tons	Unbleached Sulphite Long Tons	Bleached Sulphate Long Tons	Unbleached Sulphate Long Tons	Total Chemical Pulp Long Tons	Mechanical Pulp Long Tons	Total Grades Pulp Long Tons
1942**	330,410	383,990	46,436	93,765	882,284	189,316	1,071,600
1941*	317,225	276,240	50,176	99,156	755,238	153,170	908,408
1940	314,150	340,155	75,795	199,654	940,435	153,161	1,093,596
1939	423,379	590,445	96,669	487,727	1,606,214	203,096	1,809,483
1938	334,283	607,504	81,682	387,314	1,410,449	144,408	1,554,857
1937	465,372	835,929	101,682	565,718	1,968,701	198,545	2,167,246
1936	465,607	715,128	93,059	568,827	1,842,621	207,050	2,070,547
1935	383,475	618,872	75,600	470,329	1,557,026	169,707	1,726,732
1934	355,484	603,117	48,275	429,853	1,443,351	169,084	1,612,615
1933	400,633	643,003	36,622	461,890	1,545,994	187,750	1,733,744
1932	311,046	508,088	23,366	310,659	1,154,907	168,272	1,323,179
1931	319,518	540,478	29,683	344,612	1,237,600	188,086	1,425,686
1930	322,886	665,049	19,533	357,551	1,369,327	267,193	1,636,520
1929	334,235	701,456	15,364	384,005	1,441,110	244,162	1,785,272
1928	307,771	640,660	14,590	381,256	1,351,005	222,499	1,573,504
1927	311,130	613,856	10,789	341,162	1,280,285	219,285	1,499,570
1926	294,818	628,923	16,147	334,803	1,278,548	271,213	1,549,761
1925	286,976	579,284	17,419	306,073	1,191,875	295,618	1,487,493
1924	272,370	562,020	27,613	277,994	1,142,123	219,571	1,361,694
1923	250,580	461,853	15,422	233,696	967,869	267,527	1,235,396
1922	213,093	422,700	19,440	275,504	931,992	192,688	1,124,680

Source: 1922-1941 U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

\*1941 Figures available for nine months of 1941 on'y.

\*\*1942 Estimates. Due to war measure figures not available.



## THE DOLLARS AND SENSE OF USING H. & M. DEVELOPED FORMULAS

WITH a 10% cut in production today's reality... paper mills and their associates can well look to the future with a critical eye.

For conservation, a double-check on coloring procedures is in order. Dyestuff control, via H. & M. developed formulas, assumes a new and vital importance.

For in helping you to develop a new color match... H. & M. chemists focus on simplicity of formula and economy in the type and amount of colors used. Duplicating your mill operation under the most exacting laboratory conditions... they see the problem through your eyes. They satisfy your special requirements for fastness—to light, grease, alkalis, chemical sol-

vents, bleeding. Here is the old "ounce of prevention" in new form—waste prevention. A workable H. & M. dye formula will prevent wasting furnish, power, labor. It will help you conserve your margin of profit under reduced dollar-volume.

Your mill superintendent and chemists are familiar with the Heller & Merz Shade Card... "Colors For Paper." It covers a wide range of general applications. But whenever a special condition presents itself... you are welcome to bring your problem to paper color headquarters—Heller & Merz.

Whatever the best dyeing formula is... we'll be glad to help you create it.



HELLER & MERZ DEPARTMENT  
CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY  
BOUND BROOK, NEW JERSEY

country last year were.

The United States Pulp Producers Association estimates wood pulp exports from this country during the calendar year 1942 at a round total of 383,000 short tons of 2,000 pounds, air dry weight. The producers association estimated that total 1941 exports reached 322,000 short tons. Thus, using the Association's estimates for the two years, last year's pulp exports recorded an increase of 61,000 tons, or 18.9 per cent, over the 1941 pulp shipment from the United States to foreign markets.

This shows a larger tonnage of pulp exported from the United States in 1942 than in any calendar year on record with the single ex-

ception of 1940. During 1940, pulp exports amounted to 480,362 short tons. The exports in the past year were 97,362 tons, or 20.2 per cent, below the 1940 total, which stands as the all-time yearly high for exports of wood pulp from this country.

Estimated exports during 1942 and 1941 are divided by the association as follows: Bleached sulphite, 109,543 short tons in 1942, against 112,000 tons in 1941; unbleached sulphite, 108,851 tons, against 68,000 tons; bleached sulphate, 21,433 tons, against 10,000 tons; unbleached sulphate, 140,982 tons, against 125,000 tons; soda pulp, 2,000 tons, against 2,000 tons; miscellaneous pulp, 200 tons, against none in 1941;

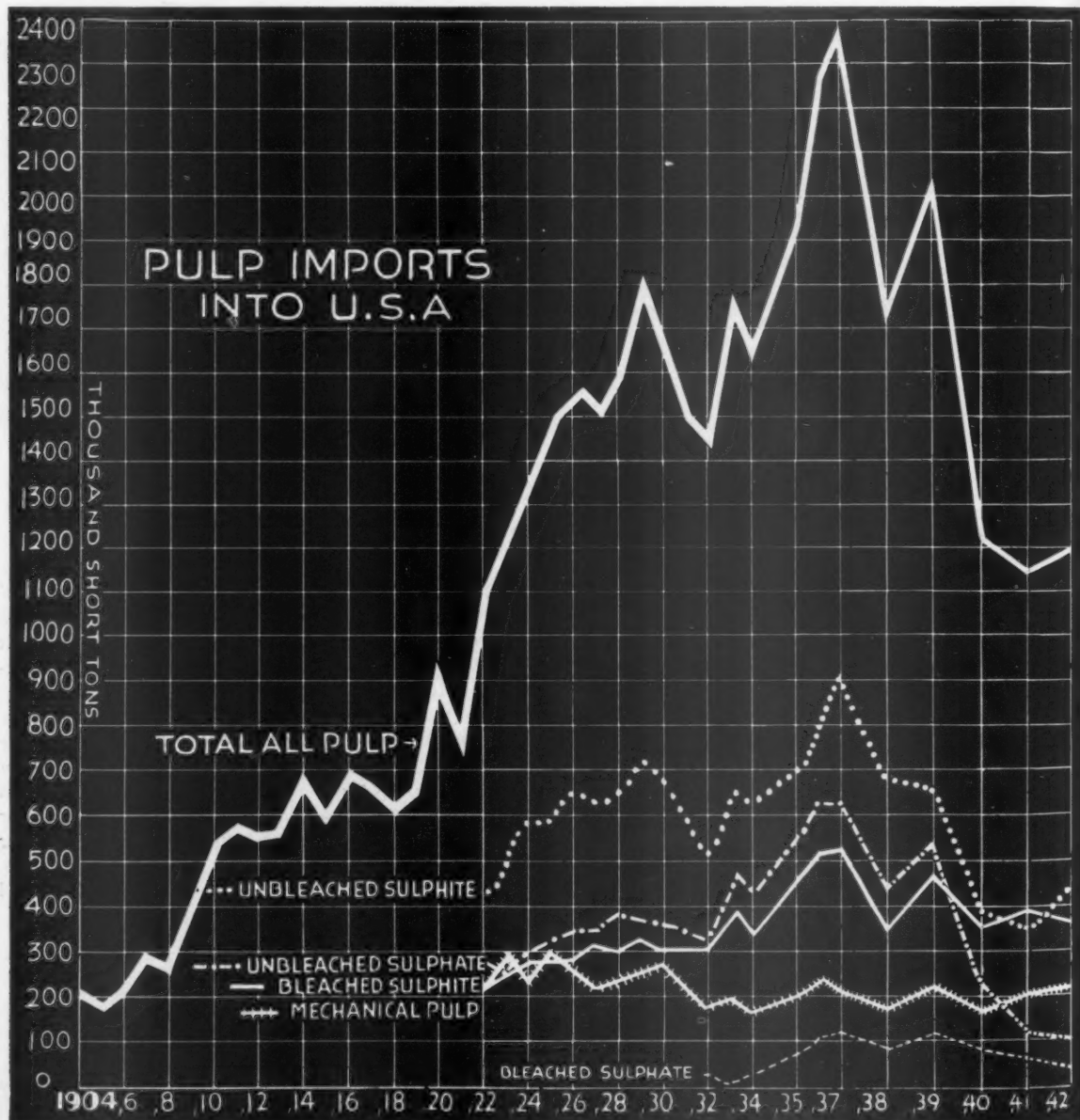
groundwood, none in 1942, against 5,000 tons in 1941.

#### U. S. WOOD PULP EXPORTS

	Quantity and Value	
	Short Tons	Value
1942	*383,000	
1941	*322,000	
1941 (9 mos.)	246,986	\$15,801,270
1940	480,362	29,649,300
1939	139,504	6,493,140
1938	140,484	9,986,826
1937	302,050	19,891,483
1936	193,485	10,600,176
1935	171,710	8,632,971
1934	142,931	7,005,559
1933	79,191	3,113,883
1932	47,860	2,037,553
1931	53,307	2,405,642
1930	48,426	2,070,553

\*Estimated.

Source for all other figures: U. S. Dept. of Commerce.







This distinguished "E" flag, awarded to us by the Army and Navy for excellence in war production, is a proud and significant symbol of appreciation that our fighting forces and the men and women of American industry are partners in the great struggle for human freedom. We are part of a *free industry of a free country* and we're working to keep it that way.

We are proud of our part in the production of war equipment. Everything we are doing at home seems so small in contrast to what our men and women are doing on the fighting fronts. Let's remind ourselves, nevertheless, that our jobs are war jobs and that *everything counts*.

We will continue to increase our production of war materials and help others increase theirs.

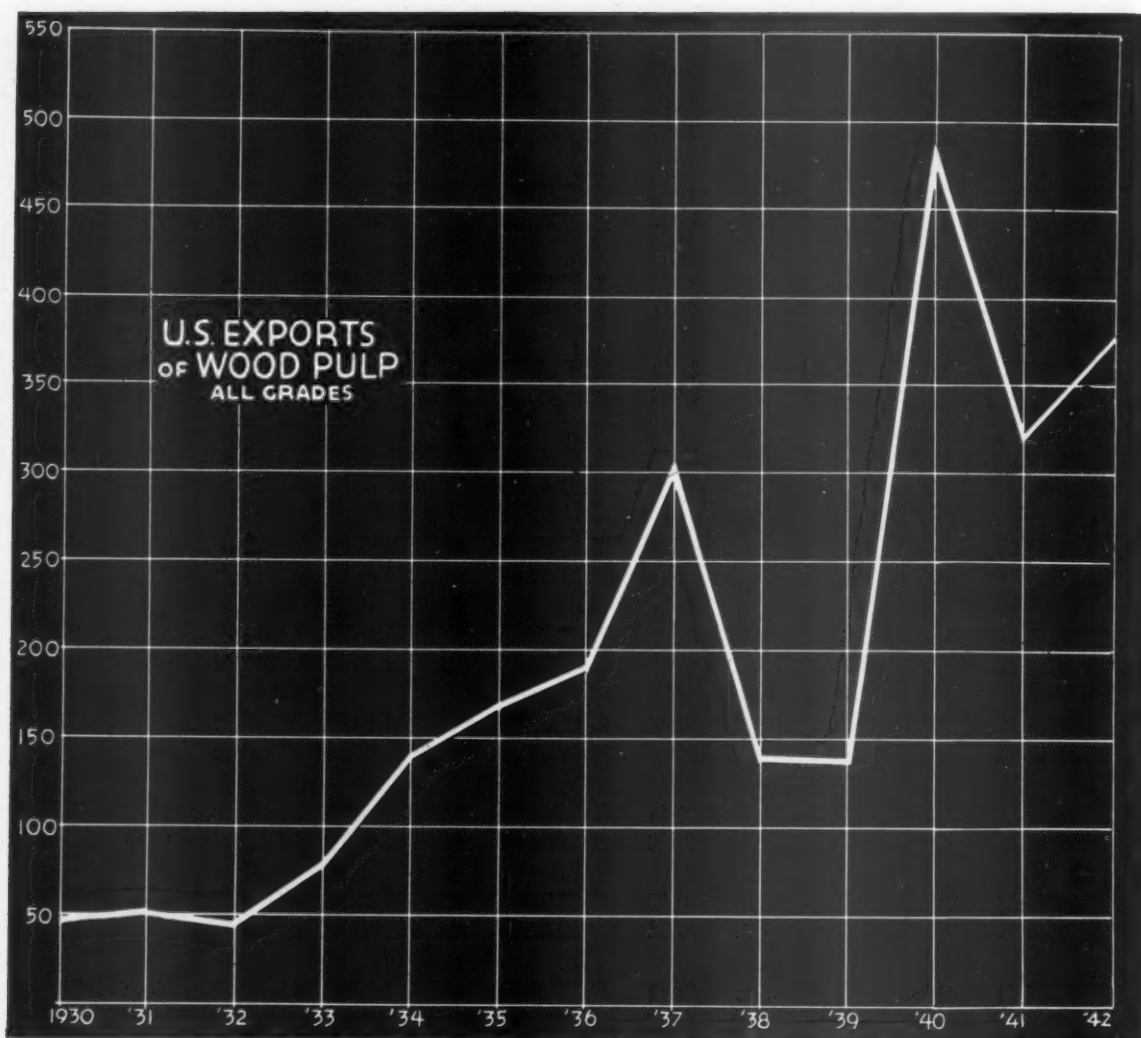
We will continue to back up our sons, our comrades and our fellow-Americans now serving with the colors. It is a privilege for us to put everything we have in resources, experience and skill into our effort to help them.

*Victory, absolute and final, is our only objective.*

Now is no time to relax. Now is the time for all of us . . . for you who read these sentiments and for us who experience them . . . to do all in our power to get this war over sooner.

It's up to you . . . and us.

**CHROMIUM CORPORATION OF AMERICA**  
NEW YORK • WATERBURY • CLEVELAND • CHICAGO

U. S. PULP IMPORTS BY GRADE AND ORIGIN (Short Tons) — NINE MONTHS OF 1941<sup>1</sup>

Grade	Canada		Newfoundland and Labrador		Finland		Others		Total
	Tons	Value	Tons	Value	Tons	Value	Tons	Value	
Mechanical Wood Pulp									
Unbleached	136,101	\$ 3,705,340	653	\$ 19,620					136,759 \$ 3,724,960
Bleached									
Total	136,101	\$ 3,705,340	653	\$ 19,620					136,759 \$ 3,724,960
Sulphite									
Unbleached	235,327	\$12,367,662	5,368	\$ 313,277	5,748	\$ 365,896			*246,643 \$13,046,835
Bleached									
Rayon	86,105	7,173,086							86,105 \$ 7,173,086
Other	196,296	13,139,056			836	53,245			197,132 \$13,192,301
Total	517,728	\$32,679,804	5,368	\$ 313,277	6,584	\$ 419,141			529,680 \$33,412,222
Sulphate									
Unbleached	82,367	\$ 4,745,110			5,965	\$ 382,510			88,332 \$ 5,127,620
Bleached	44,139	3,557,833			661	46,000			44,800 3,603,833
Total	126,706	\$ 8,302,943			6,626	\$ 428,510			133,332 \$ 8,731,453
Soda	11,011	\$ 664,414							11,011 \$ 664,414
Other Grades	4	1,355					93	22,089	97 23,464
Total	791,550	\$45,353,856	6,221	\$ 332,897	13,210	\$ 847,651	93	\$ 22,089	811,079 \$46,556,513

Note: No imports from Norway or Sweden during 1941.

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

\*Includes 5,228 tons of Screenings valued at \$93,337.

<sup>1</sup>The United States Pulp Producers Association estimates imports for the full year 1941 as follows: Mechanical, 204,000 tons; Total Sulphite, 740,000 tons; Bleached Sulphite, paper grades, 267,000 tons; rayon grades, 122,000 tons; Unbleached Sulphite, 331,000 tons; Total Sulphate, 170,000 tons; Bleached Sulphate, 60,000 tons; Unbleached Sulphate, 116,000 tons; Soda, 17,000 tons; Total All Grades, 1,145,000 tons.

## Canadian Pulp Exports Doubled in Three Years

● With the Scandinavian countries cut off by the war, Canada's importance as a world market source of pulp continued to expand in 1942. A new all-time high record for Canadian pulp exports was established in 1942, with 1,510,727 short tons, air dry weight, shipped from the Dominion, according to official Canadian government figures, an increase of 99,007 tons, or 7.1 per

cent in volume over 1941. The increase was 10.9 per cent in declared value, as shown in the accompanying table.

In the past three years, exports have increased 805,212 tons or 114 per cent in volume and \$64,266,271 or 207 per cent in value.

### CANADA Wood Pulp Exports

(Tons of 2,000 lbs.)

Year—	Chemical Pulp Tons	Chemical Pulp Value	Mechanical Pulp Tons	Mechanical Pulp Value	Total, All Pulp Net Tons	Total, All Pulp Value
1942					1,510,727	\$95,266,873
1941	1,140,563	77,061,928	271,157	8,835,808	1,411,720	85,897,736
1940	864,406	54,665,080	204,084	6,265,069	1,068,490	60,930,149
1939	536,864	26,910,425	168,651	4,090,177	705,515	31,000,602
1938	429,832	24,816,491	124,202	2,914,247	554,034	27,730,738
1937	703,915	37,670,179	166,796	4,145,552	870,711	41,815,121
1936	620,977	28,405,644	133,512	2,841,051	754,489	31,246,695
1935	538,419	24,993,785	124,049	2,631,945	662,468	27,625,730
1934	486,990	22,716,942	118,645	2,727,902	605,635	25,444,844
1933	476,358	20,666,614	132,151	2,688,023	608,509	23,354,637
1932	336,063	16,367,976	116,229	2,562,080	452,292	18,930,065
1931	457,435	25,450,476	165,096	4,606,167	622,531	30,056,643
1930	551,413	33,092,807	208,759	5,967,172	760,172	39,059,979
1929	626,378	37,670,383	209,331	5,906,638	835,709	43,577,021
1928	660,136	40,068,703	203,670	5,546,120	863,806	45,614,323
1927	618,324	39,234,577	260,831	7,761,464	879,155	46,996,011
1926	621,004	40,571,304	382,077	11,505,818	1,003,081	52,077,122
1925	599,466	37,358,632	360,265	10,573,273	959,671	47,931,905
1924	528,279	32,326,943	253,699	7,916,029	781,978	40,242,972
1923					875,358	37,027,496
1922					818,246	41,037,849
1921					527,222	33,133,675
1920					819,985	76,563,978
1919					709,134	37,184,764
1918					583,911	33,359,922

### Paper For North Africa

● Paper products ranked twelfth in a list of fifteen commodities shipped to North Africa during the first four months of 1943, according to American Paper and Pulp Assn. Paper products worth \$185,000.00 or approximately 1,000 tons made up the shipments according to an OWI release dated April 19, 1943.

While this not not a great tonnage as paper goes, it is, however, significant when shipping space is at a premium. Textiles and clothing head the list with approximately \$10,000,000 worth. Flour and sugar with over \$4,000,000 each are next.

Returning ships carry supplies of phosphate to Great Britain and supplies of cobalt, manganese, and steel alloys to the United States.

### Article on Acid Making Will Resume Next Month

● The book-length special article entitled "Acid Making in the Sulphite Pulp Industry," by A. H. Lundberg, western manager for G. D. Jenssen Company, which has been running serially in PACIFIC PULP & PAPER INDUSTRY since the beginning of the year, will be resumed in the next regular monthly issue, the June number.

Chapter I will be concluded in June. Also, Mr. Lundberg's series of sulphur dioxide saturation charts will be concluded in that issue. The charts and technical data in Chapter I will provide the basis for discussion of their utilization in mill operation. This discussion will be taken up in Chapter II.

Mr. Lundberg's article has aroused wide interest in industry circles in both this country and Canada. Many inquiries have been made to this magazine as to whether the installments appearing in PACIFIC PULP & PAPER INDUSTRY will be published in book form.

In response to those inquiries, it may be stated now that book form publication is contemplated, probably next year.



"NON-USERS  
ARE THE  
LOSERS"

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## PROFIT PRODUCERS

# NOBODY KNOWS

NOBODY knows how long the war will last. Nobody knows how long a felt will last. BUT,--over the half century that TENAX have served the paper and fibre producers, they have built up a medal-winning record. On the machines and the production charts, both, their service record is outstanding.

*"Non-Users Are  
the Losers"*



## LOCKPORT FELT COMPANY

Newfane, N. Y. • U. S. A.

*Pacific Coast Representative: ALAN C. DUNHAM, Portland, Ore.*

## Womanpower in 1942 --A Boon and a Problem

Womanpower in 1942 became a boon to the pulp and paper industry. Paradoxically, it also became a problem.

Their employment eased a labor shortage but at the same time, as one woman executive said, many of them worked under an emotional stress.

The employment of women increased by leaps and bounds throughout the Pacific Coast region as hundreds of men left their jobs in the mills to don uniforms.

Converting men's jobs to women's in the mills became a prime objective of the industry in Washington and Oregon under the General McSherry-approved joint labor management plan adopted last fall to relieve the Pacific Northwest labor crisis. It was the first western industry to adopt this voluntary program which called for transfer of men not using their highest skills to industries where they could do so and for increased employment of women.

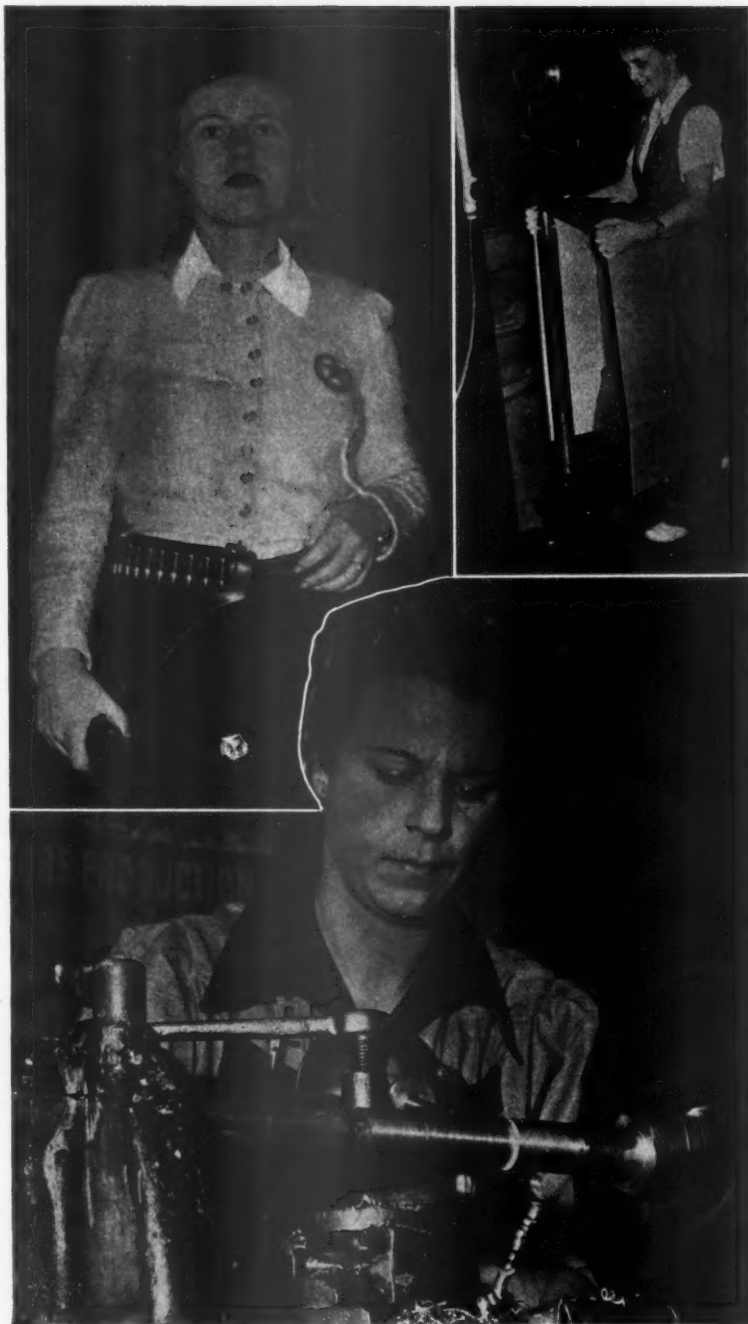
Between December 7, 1941, and February 1, 1943, a total of 596 women were added to the employment rolls in the mills of the two states, taking over men's jobs. These were in addition to several hundred women already employed—mostly in the finishing rooms. A large percentage of the newcomers were wives, sisters and mothers of men who had gone to war, many of them working in an industrial plant for the first time in their lives.

Meanwhile, in the British Columbia mills, the drain on manpower for military service had been even heavier, as it had begun in 1939. Heavy Canadian casualty lists—before this country was affected—had brought the war home to the women in British Columbia communities.

As of October 1, 1942, a total of 997 women were employed in the pulp and paper mills of British Columbia, representing 14.3 per cent of the total employment.

In 1943 there has been even more rapid employment of women in British Columbia and all the Pacific Coast states. Companies that never before had hired women for mill jobs or had not used them since the last World War, began employing them.

An example was the Crown Zel-



HERE ARE SOME OF THE WOMEN who have taken a variety of wartime jobs in Pacific Coast mills.

Upper left, LORINA HEDGES, guard at St. Helens Pulp & Paper Company main gate. Upper right, GENEVA PERSONS, running a finishing room machine at the Crown Zellerbach mill in Camas. Below, BESSIE HADSALL, lathe-operator in the Hawley Pulp & Paper Company machine shop.

lerbach mill at West Linn, Ore., where no woman had crossed the footbridge to work in the mill since 1919. Their employment here, however, did not begin until February of this year. A month later there were forty women in the finishing room, in clean-up work and on towel converting.

Several mills on the Olympic Peninsula and on Puget Sound hired women for work in the production departments for the first time in their history. One of these was the big Soundview Pulp Company of Everett, where, by May 15 of this year, more than 80 women were employed for jobs ranging from the wood mill to drying machines.

Womanpower in force could be found at the Crown Zellerbach mill at Camas, Wash., where their enrollment increased to more than 500 by May of this year. Of this number 101 were replacing men in traditional men's jobs.

Women weren't put on easy jobs, by any means. They were employed feeding grinders at St. Helens Pulp and Paper Company, St. Helens, Ore., and at Longview Fibre Company, Longview, Wash., and on wet machines at Hawley Pulp and Paper Company, Oregon City, Ore. They were entrance gate guards, trained in jiu jitsu and gunnery at St. Helens. A woman drove a mill yard jitney at Washington Pulp and Paper Corp., Port Angeles, Wash.

#### Canadian Rolls Increase

Powell River Company was one of the first primary mills on the Pacific Coast to employ women extensively, and today more than 100 are engaged in various departments, chiefly the pulp testing laboratory, beater room, finishing room and on the wet lap machine.

Foremen report that they are completely satisfied with the women workers, all of whom are employed on the day shifts.

All the women were residents of Powell River before employment and in many instances they are replacing husbands, fathers or brothers who are overseas with the fighting forces. In that way they are maintaining the family homes at Powell River which otherwise would be vacated for occupancy by other company employees.

The women are paid the same scale of wages as men, by union agreement.

Pacific Mills, Ltd., always an extensive employer of women at its converting mill at Vancouver, has been employing women at the Ocean

## Paperboard Oil Filter Saves Metal for Guns



HERE IS SHOWN ANOTHER IN THE LONG LIST OF PAPERBOARD SUBSTITUTES FOR METALS—One that is proving so successful that it has every chance to be a new peacetime product, too.

No. 1 shows the original metal oil filter cartridge for automobiles made by Fram Corporation, East Providence, R. I. No. 2 shows the new Fram "Victory" cartridge, one of the most interesting of new wartime substitute products made wholly of paperboard. The resistant quality of the paperboard is such as to hold up through continuous filtering of fairly hot oil.

Falls pulp and paper mills since the fall of 1942, about 108 being on the payroll at present out of a total of 1,200. They are distributed approximately as follows: sawmill, 36; groundwood, 2; sulphate, 6; machine room, 5; finishing room, 27; paper warehouse, 6; technical, 13; electrical, 1; mechanical, 2.

Officials of Pacific Mills say that the women seem slower than men in learning the trades, but that they are conscientious. It has been found necessary to supervise their clothing to make sure that they are suitably and safely garbed. Most of the women in the sawmill are working on airplane spurs.

B. C. Pulp & Paper Company, operating plants at Woodfibre and Port Alice, experimented with the hiring of a few women when manpower shortage became acute some months ago, but most of them have since been replaced by men.

A few women are still employed at clerical jobs. At Port Alice women have been engaged in checking, and at Woodfibre they worked in the weighing room for a while, but at all times women have been an insignificant factor in plant operation at the company's mills.

Westminster Paper Company at

New Westminster, producing specialties and a wide variety of paper lines, has always been employing a large percentage of women in all requirements except those requiring heavy manual labor and special mechanical skill. Of a total payroll of about 200, Westminster employs about 125 women.

In an article in PACIFIC PULP AND PAPER INDUSTRY'S March issue, Mrs. Vera Whitney Berney, assistant personnel supervisor at Camas, outlined some of the new problems these women have brought to the mill and gave some sound advice to mill managers and personnel managers who have to cope with them.

She described the emotional stress many of these women are under. Perhaps they have lost someone in the service. They are working purely for patriotic reasons or to help meet the bills and keep a family together. They are often bewildered and upset by machinery, by the noise and confusion and new faces in mills.

One mill manager said absenteeism among women was high because of necessary home duties and put a burden on the men in his mill.



## Wood Pulp Use In Rayon Reaches New High Record

Consumption in 1942 increased 30 per cent over 1941 with rayon industry using 280,500 tons of wood pulp. Essential wartime requirements cause 10 per cent rise in rayon production to another all-time record. Increasing civilian demand holds promise of important developments after the war.

USE of wood pulp by manufacturers of rayon yarn and staple fiber—now among our most useful and precious war materials—reached a new high record in 1942 of 280,500 tons, an increase of more than 30 per cent over the previous high wood pulp consumption mark which was set in 1941.

This one year increase of nearly one-third did more than keep pace with the increase in total United States rayon production. This, too, set a new all time record performance of 632,600,000 pounds (yarn and staple fiber) for 1942. This represented a ten per cent increase over the former record of 573,200,000 pounds established in the previous year.

Remarkable as was this substantial increase in wartime rayon production, the use of wood pulp, it will be seen, increased at three times that pace.

The 30 per cent increase in 1942 compared with an increase of 20.4 per cent in 1941, when 214,500 tons of wood pulp were used. This compared with 178,000 tons in 1940, 145,000 in 1939 and 63,000 in 1934.

### Wood Pulp Use

Wood pulp use climbed from 75 per cent of the cellulose consumption of the United States rayon industry, where it had stood since 1937, to 85 per cent, according to statistics issued by Rayon Organon, publication of the Textile Economics Bureau, Inc. This was the first time the 85 per cent figure was reached and by far the greater part of this comes from the Pacific Coast. The fact that it had risen to 75 per cent two years before the war began in Europe and had kept pace with steadily increased consumption of cellulose, was evidence wider use of wood pulp was not just a wartime development. In the years of peace as well as of war—since 1933 in fact—the original material of the rayon industry—cotton—has had a declining share in this usage.

Since the rayon industry began in the Marcus Hook, Pa., plant of the American Viscose Corporation in 1911 with a production of just 362,544 pounds, it has made a habit of annually breaking records with machine-like precision. This production compares with today's record output of 632,600,000 pounds. Rayon filament yarn and rayon staple fiber, making up this total and listed separately in the production and consumption tables accompanying this article, are both largely made from wood pulp.

The 1942 domestic deliveries of rayon amounted to 620,600,000 pounds, an increase of five per cent over the previous 1941 record, according to Rayon Organon. This total figure is made up of 468,800,000 pounds of rayon filament yarn and 151,800,000 pounds of staple fiber. Deliveries of filament yarn were four per cent above 1941.

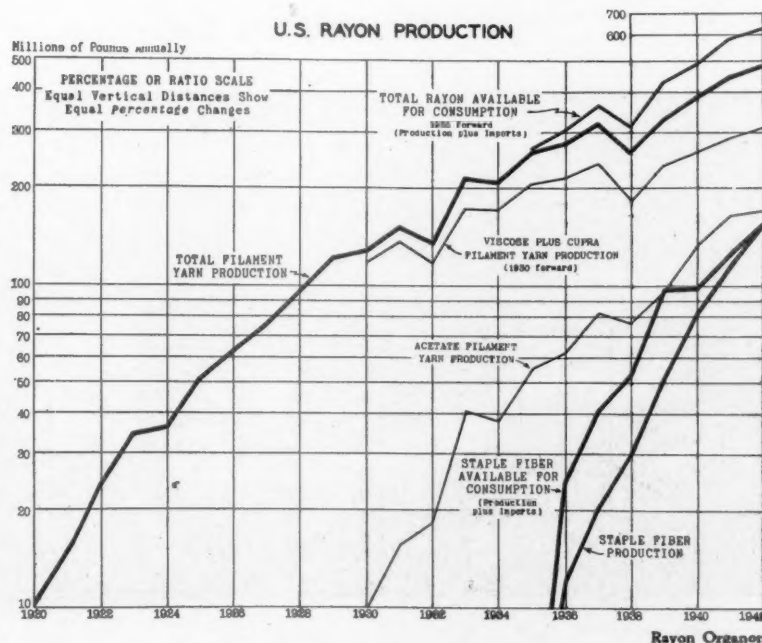
The domestic deliveries of rayon staple fiber alone in 1942 at 151,800,-

000 pounds was an increase of 9 per cent over the figure of 139,300,000 pounds in 1942 (domestic deliveries plus imports). It will be recalled that, subsequent to September, 1941, the U. S. Government discontinued the publication of all import and export data for the duration of the war. However, it is unlikely that any substantial quantity of staple fiber was imported into this country during 1942. Thus the 1942 deliveries of domestic staple fiber more than made up for the import deficiency.

### Rayon In War Products

Commenting on 1942 developments in the rayon industry, Rayon Organon said:

"The rayon yarn set aside for export to the Southern Republics, beginning in April, 1942, has been avidly sought after. The ability of these markets to consume rayon is unquestionably far in excess of this country's present ability to supply





PORT ALICE, B. C.

## **BLEACHED SULPHITE PULP**

**Manufactured to Customers' Specifications**

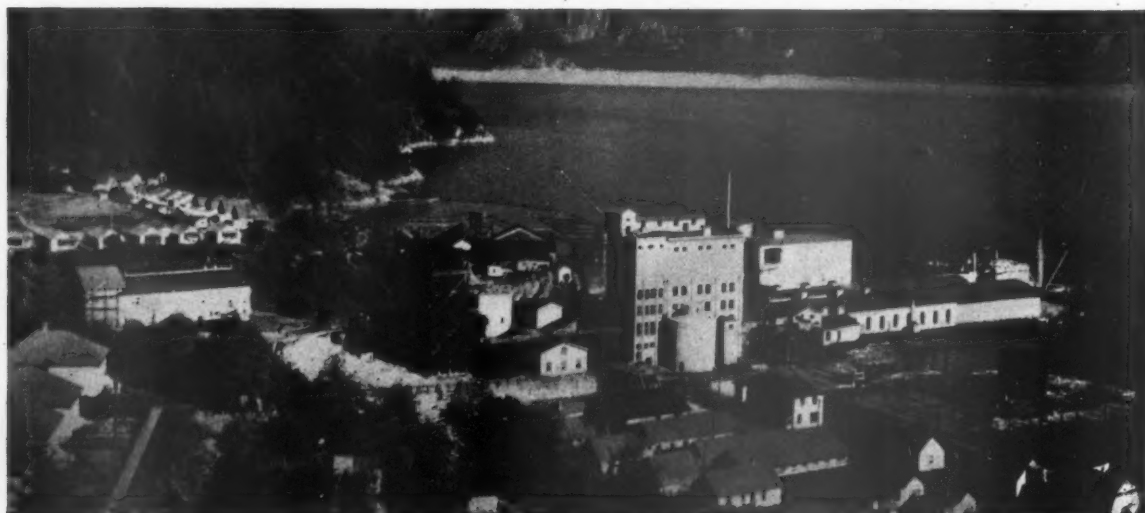
***for***

**RAYON . . . PAPER . . . PLASTICS**

---

**BRITISH COLUMBIA PULP & PAPER COMPANY  
LIMITED**

**Bank of Nova Scotia Building -- Vancouver, B. C.**



WOODFIBRE, B. C.

these needs.

"During the latter months of 1942, there were also indications of a growing foreign business in finished rayon fabrics. Considerable quantities of these rayon goods were removed from the domestic market both through Lease-Lend purchases and also for Foreign Relief and Rehabilitation Operations. As this country continues to win the friendship and help of many suppressed peoples by supplying them with food, clothing, and other necessities of life, these purchases of rayon and other textiles may reach large proportions.

"Therefore, the export of rayon yarn and rayon fabrics, both of which carry ratings as war business, have tremendous potential demand possibilities.

"Rayon yarn really started to go into direct war products during 1942. The major portion of the rayon yarn going into such products was of the viscose and cuprammonium types. In 1943, even greater quantities of these yarns will find their way into war uses. For example, in October the Government approved the conversion of certain viscose producers' production facilities from "regular" yarn to high tenacity yarn. This high tenacity yarn will be used for military purposes, primarily in tires. The quantity involved in this new program approximates 50,000,000 pounds on an annual basis. When completed in 1943, the industry's capacity for making this high tenacity yarn will be about 100,000,000

#### United States Rayon Production in Millions of Pounds

	1942	1941	1940	1939	1938	1937	1930
Rayon Filament Yarn	479.3	451.2	390.1	328.6	257.6	321.7	127.3
Rayon Staple Fiber....	153.3	122.0	81.1	51.3	29.9	20.2	0.4
<b>TOTALS.....</b>	<b>632.6</b>	<b>573.2</b>	<b>471.2</b>	<b>379.9</b>	<b>287.5</b>	<b>341.9</b>	<b>127.7</b>

#### United States Rayon Consumption in Millions of Pounds

	1942	1941	1940	1939	1938	1937	1930
Rayon Filament Yarn	468.8	452.4	388.7	362	274	267	118
Rayon Staple Fiber....	151.8	133.6	99.1	96.5	53	41	1
<b>TOTALS.....</b>	<b>620.6</b>	<b>586</b>	<b>487.8</b>	<b>458.5</b>	<b>327</b>	<b>308</b>	<b>119</b>

Source: Rayon Organon, January, 1943.

pounds annually. It should be understood that the many other war uses of viscose yarns are in addition to this large poundage.

"During 1942 the amount of acetate rayon yarn going into war products increased and additional gains may also be expected during 1943. However, since such a large share of the viscose yarn will be taken away from civilians in 1943, one of the major jobs of the acetate yarn industry will be to keep the civilian economy supplied with rayon products insofar as possible.

"The use of rayon staple fiber in war products in 1942 was small. However, a substantial increase in its use for both military and naval products during 1943 is anticipated.

"The following is a partially complete list of direct war products in which rayon is used: tires; self-sealing gasoline tanks and bullet-proof hose; aerial delivery and cargo

chutes; mine laying and fragmentation bomb chutes; shroud lines; tow targets; uniform, overcoat and sleeping bag linings; blankets; meltons; uniform materials; panties, slips, and hosiery for the WAACS and WAVES; mustard-gas-proof slickers; powder bag and cartridge cloth; paulin cloth; mosquito netting; neckerchiefs, mufflers, and neckties; flags, pennants, insignia, and chevrons; tapes; webbings for helmet assemblies; etc."

#### War Demands Increasing

The Government recently informed viscose rayon producers, largely users of wood pulp, that production of high tenacity yarn for tire cord would have to be stepped up from 100,000,000 pounds annually to 150,000,000 pounds. Thus the pulp industry is playing an important role in keeping our wheels of war as well as the wheels of essential civilian automobiles rolling.

### CELLULOSE CONSUMPTION BY THE U. S. RAYON INDUSTRY

#### Short Tons of Refined Cellulose

	TOTAL PULP		WOOD PULP*		LINTERS PULP*		RAW COTTON LINTERS†
	Tons	Per Cent	Tons	Per Cent	Tons	Per Cent	Bales
1930.....	72,000	100	45,000	62	27,000	38	115,000
1931.....	84,000	100	53,000	63	31,000	37	132,000
1932.....	74,000	100	43,000	58	31,000	42	132,000
1933.....	115,000	100	65,000	57	50,000	43	213,000
1934.....	112,000	100	63,000	56	49,000	44	209,000
1935.....	137,000	100	86,000	63	51,000	37	218,000
1936.....	151,000	100	104,000	69	47,000	31	201,000
1937.....	176,000	100	132,000	75	45,000	25	187,000
1938.....	147,500	100	110,000	75	40,000	25	160,000
1939.....	194,500	100	145,000	75	53,000	25	211,000
1940.....	238,000	100	178,000	75	60,000	25	256,000
1941.....	287,500	100	214,500	75	73,000	25	312,000
1942.....	330,000	100	280,500	85	49,500	15	211,000

\*Wood and linters in purified form as used by rayon producers.

†Bales of raw cotton linters figured on the basis of one-third overweight on refined linters pulp (due to refining losses) and converted to bales on the basis of 625 pounds net weight per bale.

Source: Rayon Organon, May, 1943.



## West Coast Payroll Breaks All Records; This Industry's Highest Wages in World

Payrolls for the pulp and paper industry of the Pacific Coast—including California, Oregon, Washington and British Columbia—broke all previous records by a substantial margin in 1942. They eclipsed the wage standards for the industry anywhere else in the world.

The highest wage levels in the history of the industry were reached on this Coast with the Pacific Coast states in a class by themselves in comparison with the rest of the United States. Unquestionably, the pay scale in this part of the world was far above the levels, past or present, anywhere on the face of the globe—as far as this industry is concerned.

The number of persons employed in the Pacific Coast industry was slightly over 1941 figures.

But the dollars in the pay envelopes rang up the outstanding advances. The higher wages, contributed along with some other factors, to less profits for many companies because of the restrictive effect of price ceilings and heavier corporate taxation. But the wage-earners, too, paid heavier taxes.

The total pulp and paper industry payroll for the entire Pacific Coast

region from the Los Angeles area to the northernmost mill at Ocean Falls, B. C., approached \$50,000,000 for about 25,000 employees. (This is the first time that this magazine has carried figures on British Columbia

in this review.)

The payroll for California, Oregon and Washington was \$35,590,357 in 1942 as compared with \$33,753,707 in 1941, the previous high record, and \$28,376,387 in 1940.

### Average Hourly Earnings in Cents of Productive Employees (Exclusive of Converting Employees) in Pulp and Paper Manufacturing.

Source: Calculated from tables received from A.P.P.A.)

	June to December Inclusive						
	1936	1937	1938	1939	1940	1941	1942
Pacific Coast	66.9	79.7	79.6	79.8	83.8	94.7	106.9
All Other U. S. Regions	53.1	62.3	61.3	61.6	65.0	72.6	81.2
North East (New England)	53.8	62.4	60.8	61.2	64.0	71.5	79.3
Middle Atlantic	55.9	65.0	63.9	64.3	67.6	76.2	85.2
Lake States	54.9	65.2	65.0	65.6	68.0	74.7	82.1
Central (North)	54.0	61.7	62.6	62.4	64.4	71.9	78.7
Central (South)	47.7	55.9	54.9	55.1	59.5	66.5	76.2
Southern (East)	47.7	56.9	57.3	55.9	61.7	74.0	84.2

### Average Weekly Earnings of Productive Employees (Exclusive of Converting Employees) in Pulp and Paper Manufacturing.

(Source: Calculated from tables received from A.P.P.A.)

	June to December Inclusive						
	1936	1937	1938	1939	1940	1941	1942
Pacific Coast	\$25.73	\$29.60	\$26.49	\$30.12	\$32.33	\$36.54	\$43.71
All Other U. S. Regions	21.74	23.85	23.19	24.65	26.11	30.23	33.55
North East (New England)	21.62	23.88	22.39	24.27	24.35	29.78	32.63
Middle Atlantic	23.23	24.72	24.04	26.74	26.29	31.97	35.84
Lake States	22.98	25.79	25.17	26.62	27.52	31.18	34.15
Central (North)	22.06	23.65	23.41	25.23	26.03	31.04	31.73
Central (South)	19.41	21.09	20.79	21.85	23.25	27.22	30.34
Southern (East)	18.43	20.98	21.39	21.82	24.52	28.88	34.71

### STATE OF OREGON

#### Payrolls and Employment

1927-1942\*

#### PULP AND PAPER MANUFACTURING

Year	Payroll	Work Days	Approximate Number Employees
Fiscal Year 1927-1928	\$2,691,220.18	581,833	1,939
Fiscal Year 1928-1929	2,946,218.92	640,724	2,136
Six Mos. July to Dec., 1931, Inc.	1,017,435.13	235,114	1,566
Calendar Year 1932	1,896,692.09	504,311	1,681
Calendar Year 1933	1,819,904.95	535,789	1,786
Calendar Year 1934	2,577,436.84	700,842	2,336
Calendar Year 1935	2,984,889.22	778,547	2,837
Calendar Year 1936	3,578,624.01	839,063	2,697
Calendar Year 1937	4,298,917.22	857,696	2,861
Calendar Year 1938	3,207,313.93	596,405	2,052
Calendar Year 1939	3,089,061.69	580,161	2,044
Calendar Year 1940	3,910,458.40	674,075	2,338
Calendar Year 1941	4,800,939.96	742,011	2,577
Calendar Year 1942	5,465,656.77	759,156	2,622

\*Statistics furnished by the Oregon State Industrial Accident Commission.  
Data from July 1, 1929, to June 30, 1931, not available.

This is for pulp and paper manufacture in all three states plus converting industries in California.

There is no annual payroll total for British Columbia in 1942 in the tables obtained by this magazine, the 1941 figure being approximately \$7,000,000. However, the average aggregate weekly payroll as of December 1, 1942, of \$246,397 (as shown in the British Columbia statistics) would indicate a considerable advance in 1942, probably bringing the total Pacific Coast payroll to close to \$50,000,000. If converting plants in the northern area were included this would certainly be the case.

Oregon lists 2,622 employees in 1942, an increase of just 45 over the 1941 figure.

California (including converting plants) reached a peak of 7,246 in November and a low of 6,881 in June as compared with 1941 figures as 7,343 in August and 6,049 in January, the low month of that year.

Washington state's tables show a 7.7 per cent increase in employment (as compared with a 20.2 increase in payroll dollars) but its employment statistics are in man hours. Arbitrarily assuming an eight-hour day and 310-day work year, this would mean the employees in the industry in Washington totaled 7,920 in 1942.

In British Columbia there were 7,188 employed as of December 1, 1942.

Therefore, the total employment in the industry in 1942 in California (peak figure), Oregon, Washington and British Columbia was 24,730.

Here are comparative annual totals for the three Pacific Coast states:

#### WASHINGTON

Year	Earnings	M. Hrs.
1942	\$20,724,118	19,642,765
1941	\$17,236,948	18,234,058

#### OREGON

Year	Earnings	Employees
1942	\$5,465,656	2,622
1941	\$4,800,940	2,577

#### CALIFORNIA

Year	Earnings	Plants
1942	\$13,400,585	123
1941	\$11,715,819	121

According to a separate group of tables issued by the American Paper and Pulp Association, the earnings of employees in the three Pacific

### STATE OF WASHINGTON PAYROLLS AND HOURS WORKED 1927-1942

ALL HAZARDOUS INDUSTRY OF STATE				LUMBERING				PULP AND PAPER MANUFACTURING			
Year.	Payroll	Workmen Hours	Increase or Decrease Compared With Preceding Year	Payroll	Workmen Hours	Increase or Decrease Compared With Preceding Year	Payroll	Workmen Hours	Increase or Decrease Compared With Preceding Year	Payroll	Workmen Hours
1927	\$255,669,929	396,071,584	6.08%	\$83,446,482	130,841,328	4.0%	\$4,855,526	7,710,848	14.78%	\$4,855,526	7,710,848
1928	271,223,403	414,002,480	6.52%	83,782,300	127,973,488	3.82%	5,573,223	8,507,600	40.77%	5,573,223	8,507,600
1929	288,903,912	437,600,400	-10.00%	86,986,842	131,720,152	-28.45%	7,845,335	12,275,072	16.12%	7,845,335	12,275,072
1930	260,002,808	397,369,096	-27.42%	63,093,612	98,102,528	-47.32%	9,110,285	13,874,832	-23.26%	9,110,285	13,874,832
1931	188,705,890	317,120,680	-19.56%	33,236,663	64,161,624	-49.29%	6,990,889	11,360,944	2.03%	6,990,889	11,360,944
1932	131,893,000	255,078,920	2.29%	16,833,140	41,214,176	37.07%	5,063,638	8,960,224	8.18%	5,063,638	8,960,224
1933	129,023,888	260,928,662	10.12%	23,101,145	51,066,187	28.54%	5,166,375	9,693,579	22.10%	5,166,375	9,693,579
1934	161,702,804	284,179,483	16.00%	29,693,289	51,106,876	19.18%	7,435,151	11,835,457	9.37%	7,435,151	11,835,457
1935	187,578,233	312,935,429	28.99%	35,389,039	57,808,831	46.32%	8,131,888	12,560,285	16.55%	8,131,888	12,560,285
1936	241,960,112	379,926,777	8.64%	51,799,595	77,214,714	13.80%	9,858,151	14,638,927	27.89%	9,858,151	14,638,927
1937	286,480,085	412,743,811	-8.07%	58,947,801	77,777,272	-25.93%	12,607,622	16,305,933	-18.88%	12,607,622	16,305,933
1938	267,784,196	379,432,496	+8.91%	43,719,909	55,718,862	+14.99%	10,227,766	12,254,194	+16.54%	10,227,766	12,254,194
1939	303,602,602	413,236,113	+10.96%	50,275,519	63,648,087	+13.11%	11,919,822	14,197,262	+21.79%	11,919,822	14,197,262
1940	345,887,756	498,512,732	+37.41%	56,867,830	70,377,299	+22.40%	14,517,595	16,905,387	+18.73%	14,517,595	16,905,387
1941	475,291,383	561,751,286	+71.50%	69,603,895	76,588,933	18.34%	17,236,948	18,234,058	20.23%	17,236,948	18,234,058
1942	815,109,078	776,362,062		82,368,711	77,716,748		20,724,118	19,642,765		20,724,118	19,642,765

Industry as a whole: Payroll in 1942 was 218.8% more than in 1927 while hours worked show an increase of 96.02%.

Lumbering Industry: Payroll and hours worked respectively in 1942 were 1.3% and 40.6% less than in 1927.

Pulp and Paper Mfg.: Payroll and hours worked respectively in 1942 were 326.8% and 154.7% greater than in 1927.

Source: Department of Labor and Industries, State of Washington.

Coast states was far in advance of those in other sections of the country and showed a big increase in 1942 over the previous year.

Average weekly earnings of employes in coast mills (not converting), according to the APPA cal-

culations, rose from \$36.54 for the last six months of 1941 to the record figure of \$43.71 for a like period in 1942. The United States average weekly pay was \$10.17 less. In 1941 it had been \$6.31 less.

The only section of the country

approaching the Pacific Coast payroll level was the Middle Atlantic group of states where the average weekly wage was \$35.84 in 1942 or \$7.87 less than the coast pay scale. In 1941 for the last six months it had averaged \$4.57 less.

### PROVINCE OF BRITISH COLUMBIA

Year—	Payroll	Number of Firms	Average Work Week	Employment Pcts. (using 1926 figures as 100%)*
1941 (latest)	\$6,967,732	12	47.46 hrs.	155.5%
1940	6,178,177	13	47.78 hrs.	130.7%
1939	4,688,341	14	47.96 hrs.	118.7%

Breakdown of 1941 payroll: \$740,486 to executives; \$467,628 to salesmen, office employees; \$5,759,618 to mill employees.

\*As of December 1. For 1942 it was \$159.8%. Other official figures for December 1, 1942, follow:

Number of employees, 7,188; aggregate weekly payroll, \$246,397; per capita weekly earnings, \$34.28.

The above indicates a big increase in the yearly payroll of 1942 over the figures for the preceding three years.

### STATE OF CALIFORNIA

#### Employment and Payroll Data in the Paper and Paper Products Manufacturing Industry 1942\*

Based on All Contribution Reports Submitted to the Department Prior to February 25, 1943

Industry	Total wages paid	Wages subject to contributions	Number of establishments(a)	Number of Workers											
				Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total	\$13,400,585	\$12,613,761	123	7,036	7,040	7,046	6,910	6,877	6,881	6,816	6,904	6,976	7,212	7,246	7,087
Coated and Glazed Paper	1,005,093	907,065	8	592	586	581	589	602	641	665	649	648	687	713	712
Paper Envelopes	1,220,105	1,135,080	13	720	720	723	680	697	702	690	673	677	648	671	676
Paper Bags	404,923	373,962	4	204	185	202	201	201	214	191	183	215	241	227	217
Paperboard Containers and Boxes	8,311,473	8,044,308	57	4,285	4,270	4,273	4,227	4,163	4,135	4,082	4,153	4,222	4,437	4,454	4,311
Pulp Goods and Paper Products, not elsewhere classified (b)	2,458,991	2,153,346	41	1,235	1,279	1,267	1,213	1,214	1,189	1,188	1,246	1,214	1,199	1,181	1,171

(a) Each branch of a multiple establishment-concern is counted as a separate establishment.

(b) Includes branches of such firms as pulp mills, paper mills, and paperboard mills, consolidated to avoid divulging confidential information.

\*California Department of Employment affiliated with Social Security Board. Report 127A No. 43. Research and Statistics April 16, 1943.

### Men's Earnings Rise in B. C.

● Average weekly earnings for men employes only in the pulp and paper industry of British Columbia have risen steadily as shown in this table:

1934	\$23.22
1935	23.53
1936	24.22
1937	26.75
1938	26.36
1939	26.54
1940	29.84
1941	32.13

### Army Uses Rayon Chutes

The performance of rayon parachutes in the war effort and some interesting information in the use to which rayon parachutes are put

by the Army was recently given in the Crown Rayon News, a publication of the American Viscose Corporation.

The rayon parachutes discussed included an aerial delivery parachute with a canopy diameter of 24 feet and four delivery cargo parachutes with canopies ranging from 24 to 48 feet in diameter. In describing the performance of these chutes the article pointed out that the aerial delivery chute is rated to carry 300 pounds at a speed of 150 miles per hour. These delivery parachutes are used for dropping such items as food, ammunition and light armament.

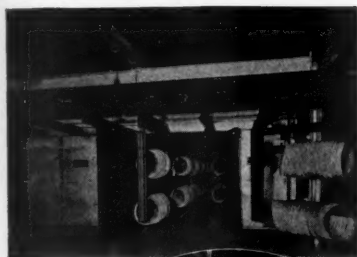
Cargo chutes carry heavier loads. A typical rating is a load of 1½ tons at a speed of 125 miles per hour. The size of the chute differs with the job to be done. These cargo chutes are used for dropping heavy equipment, including large caliber guns and tanks. When especially heavy equipment is dropped such as a tank weighing several tons, a number of cargo chutes are used. This is known as "cluster dropping" since the parachutes descend in a group or cluster.

These reports bring home to the wood pulp industry of the Pacific Coast, now the principal supplier for rayon manufacture, its importance in the war effort.



# We've got a new boss and a bigger job to do!

Ross Oven Baking Wire

Ross Panel Housing for  
Continuous Core Oven for  
Magnesium CastingsArmature Cores Are Being Uni-  
formly Baked In This Ross  
Compartment Oven

It won't surprise our customer friends in the Paper industry to learn of the many extra assignments we have been called upon to handle in this time of emergency. You knew the extent of our knowledge and experience in conditioning, circulating and handling air for processing. We used it to solve many paper mill problems and problems in the metal industries as well.

It was the kind of experience that Uncle Sam needed urgently so we are working for him—building ovens, dryers and air handling systems that are speeding up the production of magnesium and aluminum castings and parts for airplanes, drying powder, coating shells and scores of equally essential war work products.

Our services are still available to paper mills that require systems for producing high priority war work. Our engineering help is still available to all other paper mills with problems in their post-war development work.

We are working a lot—and learning a lot. Bring us your problem. We will help you in any way we can.



**Not 90% but  
100%**

of all our employees in offices and shops are purchasing bonds amounting to not 10% but more than 10% of our entire payroll.

• • • • •  
**Buy More War Bonds!  
Collect More Scrap!  
Conserve Materials!**

Ross Continuous Oven for Heat  
Treating Magnesium Alloy  
Castings

## J. O. ROSS ENGINEERING CORPORATION

Main Office — 350 MADISON AVE., New York, N. Y.

CHICAGO—201 North Wells Street



DETROIT—12953 Greeley Avenue

ROSS ENGINEERING OF CANADA, LIMITED, Dominion Square Building, Montreal

## Pulpwood Resources Of the Pacific Northwest

THE accompanying tables show the latest figures on the volume of pulpwoods, other than Douglas fir, available for cutting in western Washington and western Oregon.

They do not include timber on municipal watersheds, state and national forests, national parks, etc., which, because of laws or declared public policy, is not available for commercial use.

In this region there is nearly eighty billion cubic feet of Douglas fir, about twice the volume of the true pulping species. This species is not included, but in view of recent progress in the pulping of this wood experimentally, it should be considered when analyzing the timber available for future use.

These figures are from data prepared by the Pacific Northwest Forest and Range Experiment Station, U. S. Forest Service, Portland,

Ore., based on forest surveys started in 1930, and completed in 1933 and 1934. The results were first published in the Review Number of this journal in 1937, and revised in the 1938, 1939, 1940 and 1941 Review Numbers. References may be made to the 1938 issue for greater detail as to the forest study.

Since completing the survey the experiment station staff has brought the inventory of the forests of the majority of the counties in the re-

Table I

Volume in thousand cubic feet<sup>1</sup> of pulp wood other than Douglas fir, in Western Washington and Western Oregon, available for cutting,<sup>2</sup> by species and group<sup>3</sup>

Species.	Western Oregon	Western Washington	Total
Western hemlock .....	5,733,000	15,494,000	21,227,000
Sitka spruce .....	971,000	1,174,000	2,145,000
Balsam fir <sup>4</sup> .....	3,461,000	5,966,000	9,427,000
Mountain hemlock and Engelmann spruce .....	943,000	309,000	1,252,000
Black cottonwood .....	64,000	124,000	188,000
Total .....	11,172,000	23,067,000	34,239,000

<sup>1</sup> Includes all trees 4 inches and more diameter breast height.

<sup>2</sup> Excludes timber reserved for cutting in municipal, State, and Federal ownership.

<sup>3</sup> Data from Pacific Northwest Forest and Range Experiment Station. Based on Forest Survey inventory of 1933 adjusted for estimated cutting depletion 1934-1941, inclusive.

<sup>4</sup> Includes Pacific silver fir, Grand fir, noble fir, Shasta red fir, white fir, and alpine fir.

Table II

Volume of pulp woods, other than Douglas fir, in Western Washington and Western Oregon available for cutting, by county.<sup>1</sup>

Washington		Oregon	
County <sup>2</sup>	In thousands of cubic feet	County:	
Clallam .....	2,753,000	Benton .....	35,000
Clark .....	34,000	Clackamas .....	1,103,000
Cowlitz .....	885,000	Clatsop .....	1,166,000
Grays Harbor .....	2,552,000	Columbia .....	40,000
Island .....	9,000	Coos .....	373,000
Jefferson .....	2,237,000	Curry .....	185,000
King .....	1,942,000	Douglas .....	1,629,000
Kitsap .....	19,000	Hood River .....	293,000
Lewis .....	2,049,000	Jackson .....	959,000
Mason .....	338,000	Josephine .....	110,000
Pacific .....	1,791,000	Lane .....	1,553,000
Pierce .....	1,234,000	Lincoln .....	602,000
San Juan .....	11,000	Linn .....	1,444,000
Skagit .....	1,753,000	Marioin .....	507,000
Skamania .....	1,815,000	Multnomah .....	32,000
Snohomish .....	2,176,000	Polk .....	172,000
Thurston .....	32,000	Tillamook .....	906,000
Wahkiakum .....	458,000	Washington .....	43,000
Whatcom .....	979,000	Yamhill .....	20,000
Total .....	23,067,000	Total .....	11,172,000

<sup>1</sup> Includes all trees 4 inches and more diameter breast height.

<sup>2</sup> Compiled by Pacific Northwest Forest and Range Experiment Station from forest-survey data adjusted for estimated depletion by cutting to 1942.

gion up to date through field examination. To date the reinventory has been completed for the following 22 counties in which cutting depletion has been heaviest: Grays Harbor, Pacific, Pierce, Snohomish, Thurston, Cowlitz, Clallam, Wahkiakum, Lewis, Kitsap, Jefferson, Mason, King, Skagit, and Whatcom Counties, Washington; Clatsop, Columbia, Coos, Washington, Benton, Polk, and Tillamook Counties, Oregon. The reinventory in Clark, Island, and San Juan Counties, Washington, and Lane, Lincoln and Yamhill Counties, Oregon, will be completed later this year. It is expected that the reinventory of the remaining counties will be completed at the rate of five or more counties each year.

Figures on the counties named are based on the reinventory. The other counties have been brought up to date by adjusting for estimated depletion since the original survey, the depletion being determined from the timber cut figures.

Although the data are partially based on estimates of depletion, the figures have been rounded to thousands of cubic feet, and because of the large volume, the percentage of error can be considered relatively small. The tables are sufficiently accurate for all practical purposes.

The cubic foot volume estimates give the total sound wood content of the stem of the tree, exclusive of bark and limb wood. Decayed material is omitted, as well as the entire volume of all cull logs having more than two-thirds of the board-foot content defective. No deduction is made, however, for breakage in logging.

The tables do not take into consideration the economic availability of the pulp species, that is, whether or not the timber could be profitably logged at this time. Table III, page 111 of the 1938 Review Number, gives this information. Changes through depletion make revision of this particular table impractical, but if desired, the reader may refer to the 1938 figures, since the percentages in each class of economic availability remain approximately the same at this time.

The ratio of timber in the various ownership classes also remains about the same. Approximately 45 per cent is privately owned, 43 per cent on national forest lands and 12 per cent on other public lands such as county, state, Indian reservations, etc.

Geographical distribution of pulpwood volume is shown by counties in Table II.

INLAND EMPIRE PULPWOOD<sup>1</sup>  
Amount of Pulpwood in the Inland Empire by Species and Locality in Thousand Cubic Feet

Subregion/	Engelmann spruce			Heelock			Balcon fir			Black cottonwood			All species		
	Saw-timber	Cordwood	Total	Saw-timber	Cordwood	Total	Saw-timber	Cordwood	Total	Saw-timber	Cordwood	Total	Saw-timber	Cordwood	Total
Thousand Cubic Feet															
Northeastern Washington	15,600	14,200	29,800	24,000	22,300	46,300	27,500	42,300	69,800	110	50	160	67,210	78,850	146,060
North Idaho	474,000	129,000	603,000	198,000	183,000	381,000	1,250,000	472,000	1,722,000	9,000	1,000	10,000	1,931,000	785,000	2,716,000
Western Montana	676,000	151,000	827,000	27,000	27,000	54,000	111,000	124,000	235,000	36,000	6,000	42,000	850,000	308,000	1,158,000
Total for Inland Empire	1,165,600	294,200	1,459,800	249,000	232,300	481,300	1,388,500	638,300	2,026,800	45,110	7,050	52,160	2,843,210	1,171,850	4,020,060

<sup>1</sup>The volumes are from Forestry Survey data for nonreserved commercial forests as of January 1, 1943. They include the sound wood volume from stump to a 4- to 6-inch diameter of all trees larger than 3 inches d.b.h. The cottonwood estimate includes also the volume of peeled limbs 4 inches and larger diameter. Saw-timber includes coniferous trees larger than 13 inches d.b.h. and cottonwood trees larger than 11 inches d.b.h.; cordwood includes the volume of trees from 3 inches d.b.h. to saw-timber size.

<sup>2</sup>Based on Forest Survey estimates adjusted for growth and drain up to January 1, 1943, with the exception of cottonwood for Northeastern Washington.

● Here is the latest data on pulpwood species in the Inland Empire—Northeastern Washington, Northern Idaho and Western Montana—supplied to the magazine by the Northern Rocky Mountain Forest and Range Experiment Station, U. S. Forest Service, Missoula, Mont.

In reference to these estimates, Paul D. Kemp, acting in charge, Division of Forest Survey, of that station, stated in a memorandum on April 6, 1943, addressed to the director, M. Bradner:

"The estimates shown in the at-

tached table are based on Forest Survey estimates adjusted for growth and drain up to January 1, 1943. The only exception is in respect to the cottonwood estimates for Northeastern Washington, which are based on personal judg-

ment. The Survey estimate for this species and subregion in 1935 was 223 M board feet whereas the reported cut since that date totaled 1,600 M board feet, indicating that the original Survey estimates were much too low."



## Pulp and Paper--A Major Industry

Wars must come to an end eventually and the value and interest in the tables on this page is in showing how the pulp and paper industry, in normal times, ranks as an outstanding industry on the Pacific Coast.

The data presented is from the Census of Manufactures for 1939, the last year of peace, and was issued by the American Paper and Pulp Association. It shows that in Washington

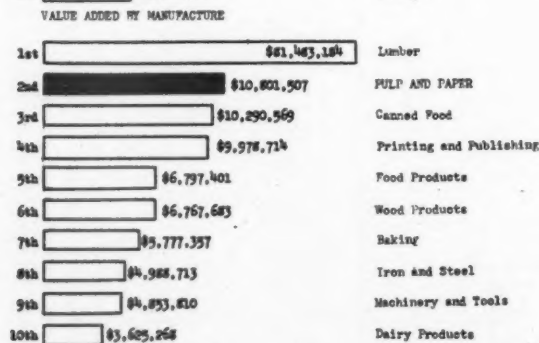
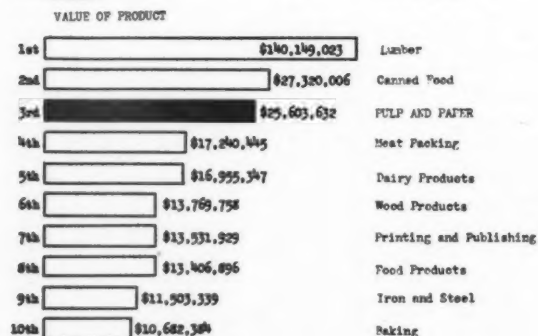
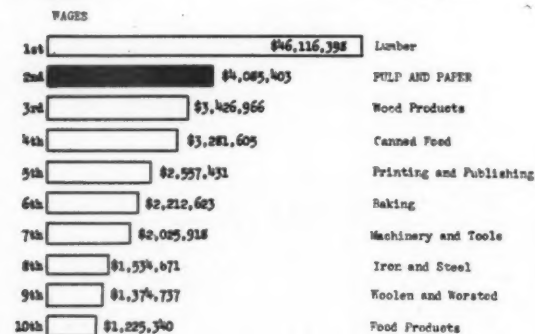
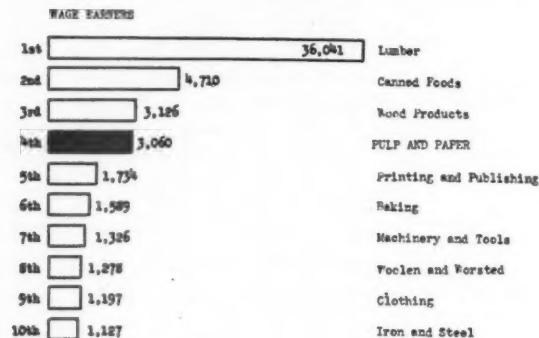
state, the pulp and paper industry is normally second in importance to lumbering. In Oregon, it ranked second in wages and third in value of product.

It will be noted that employment figures of 8,106 in Washington and 3,060 in Oregon in the pulp and paper industry, as shown in these tables, are slightly over the figures for recent years published elsewhere in this issue in the article on Pacific Coast payrolls. Apparently this is because the figures in these tables include converting plants.

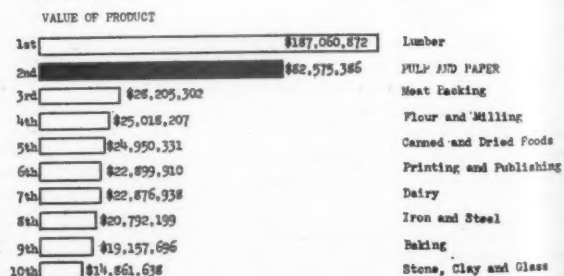
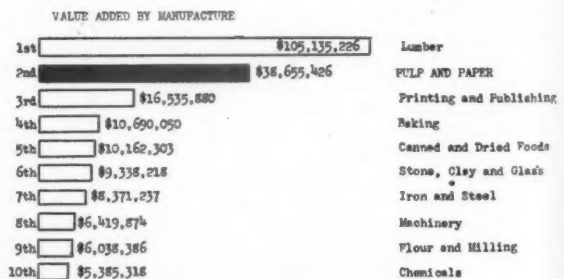
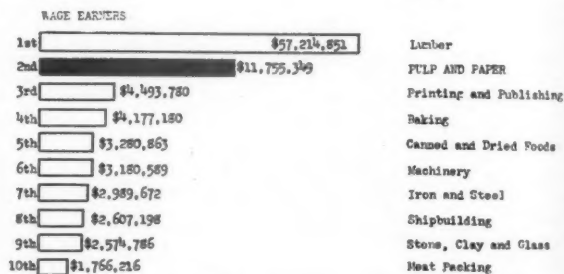
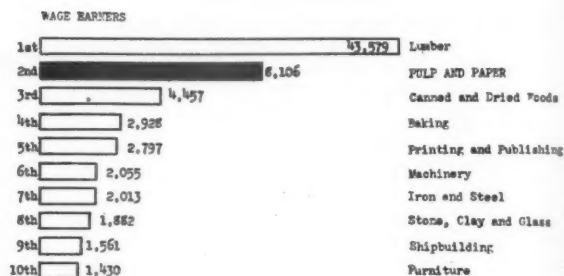
More recent information from British Columbia, for the year 1941, which, of course, included war industries, shows pulp and paper taking a lower comparative position among industries in that province.

In comparison of total payrolls in British Columbia, in 1941, pulp and paper ranked eighth, those preceding being lumber, mining, food products, metal trades, street railways, shipbuilding and coast shipping. In average weekly wage, pulp and paper ranked seventh after explosives, shipbuilding, printing and publishing, smelting, metal manufacturing and jewelry manufacturing.

### OREGON



### WASHINGTON



<b>PR-IIA</b> OUTLINES 2nd QUARTER '43 PROCEDURE for PRP units. Obsolete 6/30/43  Mailed to industry 2/4/43	<b>P-140</b> Preference rating order for WOODEN AND FIBRE CONTAINERS. Gives AA-2x for containers to be used for export, Maritime Commission, War Shipping Administration, the Panama Canal, and the army and navy unless located in the United States. Gives AA-5 for paper and pulp domestic shipment  Mailed to industry 3/5/43 Materials and Supplies No. 9	<b>CMP-1</b> Explains OVERALL CMP Paper and pulp mills will not be involved except in CMP-5. Informative.  CMP-1 available on request to WPB or APPA	<b>CMP-2</b> LIMITS INVENTORY OF CONTROLLED MATERIALS to 60 day supply. Calls for Report Form CMP-7 See block on CMP FORMS.  Available on request to WPB or APPA.	<b>CMP-3</b> Describes operation of PREFERENCE RATINGS AND ALLOTMENT under CMP. Since paper and pulp mills work under CMP-5, this order applies only in a general way.  Available on request to WPB or APPA.
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**PR-II**  
 PRODUCTION REQUIREMENT PLAN regulation  
 MRO portion expires 3/31/43  
 Order obsolete 6/30/43  
  
 Mailed to industry 10/9/42 and 2/4/43  
 Material and Supplies No. 5  
 National Defense 219

**PR-3**  
 Outlines method of APPLYING AND EXTENDING PRIORITY RATINGS.  
  
 Mailed to industry 10/9/42  
 National Defense 219

**PR-1**  
 BASIC PRIORITY REGULATION outlines priority system.  
  
 Mailed to industry 12/29/41  
 National Defense No. 56

**CMP FORMS**  
 1, 2, 3, 4, 5, 6, 7, 8, 9, 13  
 Paper and pulp mills use only Form 7 and then only if requested by WPB. Form CMP-7 is quarterly report of inventory of controlled materials.

**PD-1A**  
 Use this form only when CMP-5 is not applicable, as in the case of capital equipment, or does not give a sufficiently high rating. File with nearest WPB field office. Use revised form  
  
 See letter to industry March 5, 1943  
 Materials and Supplies No. 8

**PAPER AND PULP INDUSTRY**

**CMP-4**  
 Specifies procedure of WAREHOUSES AND DISTRIBUTORS in marketing controlled materials. Limits amount of controlled materials to each customer.  
  
 Available on request to WPB or APPA

**CMP-5**  
 MAINTENANCE, REPAIR AND OPERATING ORDER. Grants automatic AA-2x rating to pulp and paper mills for MRO supplies. Most important CMP Order for pulp and paper industry. (See M-208 for softwood lumber)  
  
 Mailed to industry 2/12/43  
 Materials and Supplies No. 5

**CMP-6**  
 (Not issued to date; intended to cover construction and facilities under CPM)

**CMP-7**  
 Outlines procedure of APPLYING RATINGS UNDER CMP-5. Gives alternate certification that may be used on orders under the CMP with applicable ratings.  
  
 Mailed to industry 3/5/43  
 Equipment and Construction No. 1

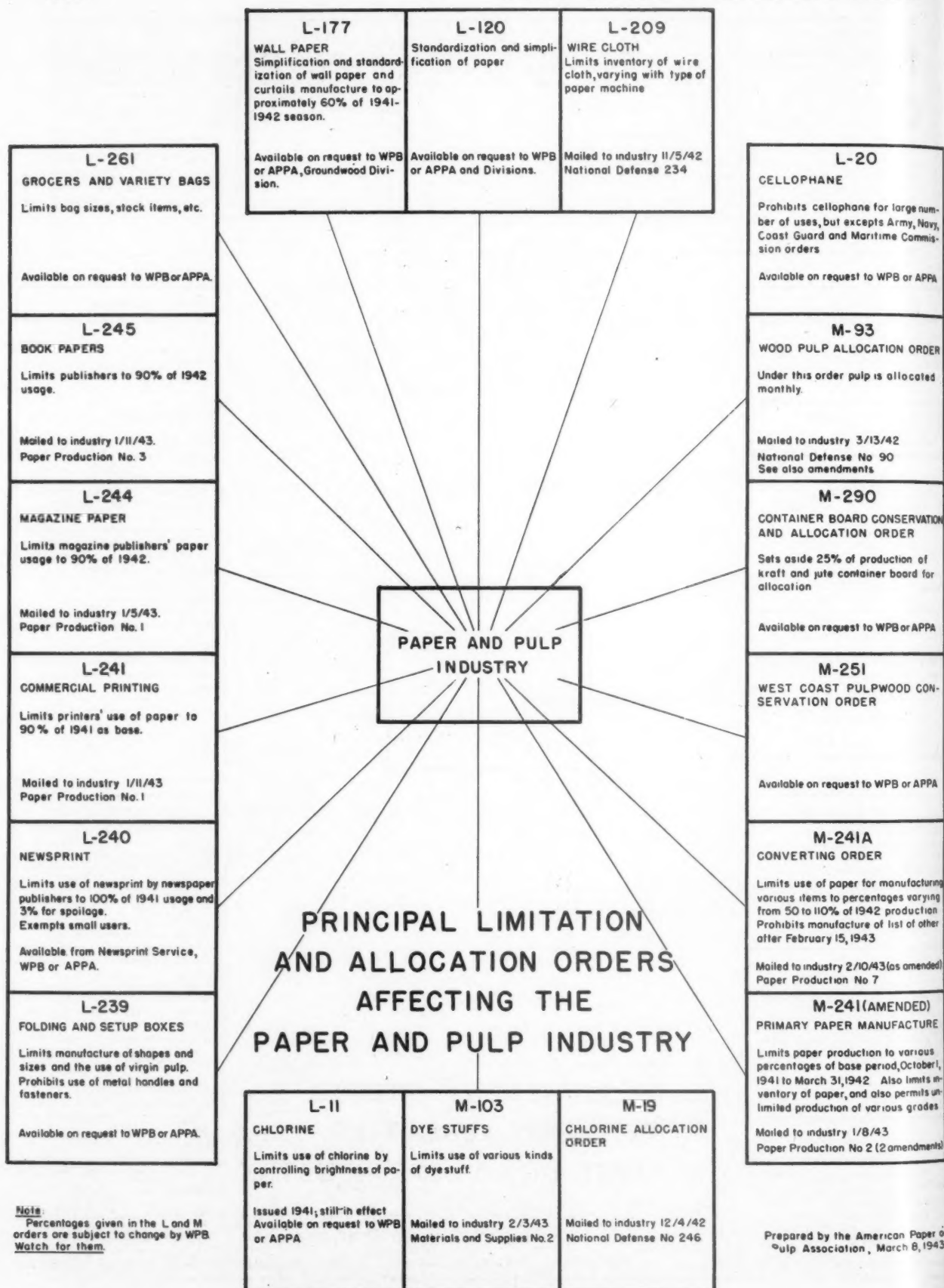
**M-208**  
 SOFTWOOD LUMBER. Pulp and Paper mills use this for buying softwood lumber instead of CMP-5. Gives AA-2x for government and LL orders, AA-3 for repair of industrial buildings, and AA-5 for ordinary crating of paper.  
  
 Available on request to WPB or APPA

## PROCUREMENT ORDERS VITALLY AFFECTING THE PAPER AND PULP INDUSTRY

Note  
 There are many other orders that affect procurement in the pulp and paper industry, but in a much smaller degree. Copies of orders are available at WPB field office, or write the APPA.

Contributed by Priorities Committee,  
 American Paper and Pulp Association  
 March 8, 1943

This chart and the one on the next page, showing at a glance the more important wartime limitation orders affecting the pulp and paper industry may prove of value to superintendents, mill managers, purchasing agents and other executives.





# The Pacific Coast Industry Offers a Large Variety of Products

As the market grows the variety of pulps, papers, paper-boards and converted products manufactured in the region continue to expand—This list is presented as a service to the industry and to its customers.

## A

### THE ADHESIVE PRODUCTS INC.

San Francisco  
Products

Gummed Sealing Tape  
Bookbinders' Gummed Hollands  
Stay Tape  
Veneer Tapes  
Corrugated Box Tapes  
Industrial Adhesives

### ANGELUS PAPER BOX CO.

Los Angeles  
Products

Corrugated Paper Boxes  
Folding and Set-Up Boxes

### ANGELUS PAPER EXCELSIOR PRODUCTS CO.

Los Angeles  
Products

Adding Machine Paper  
Cash Register Paper  
Tabulator and Teletype Paper  
Addressing and Listing Papers  
Embossed Packing  
Serpentine  
Other Roll Paper Specialties  
Paper and Wood Excelsior  
Paper and Wood Furniture Pads  
Embossed Chip Board  
Pipe and Tire Wraps

## B

### BARTRAM PAPER PRODUCTS CO., LTD.

Vancouver, B. C.  
Products

Bag Specialties  
Candy Bags  
Cellophane Bags  
Coffee Bags  
Garment Containers  
Glassine Bags  
Greaseproof Specialties  
Grocery Bags  
Laundry Bags  
Millinery Bags  
Shopping Bags  
Notion Bags

### J. E. BERKHEIMER MFG. CO.

Tacoma, Wash.  
Products

Saturating Felt  
Building Paper  
Deadening Felt  
Roof Coatings  
Composition shingles

Asphalt  
Brick Siding

### BRITISH COLUMBIA PULP & PAPER CO., LTD.

Office, Vancouver, B. C.  
Mills, Port Alice and Woodfibre, B. C.

Products  
Bleached Sulphite Pulps for Rayon and  
High Grades Papers

### BROWN PAPER GOODS CO. OF CALIFORNIA

Los Angeles, San Francisco and Seattle  
Products

Glassine and Allied Bags  
Lo Fold Napkins  
Cocktail Napkins  
Retail Pkgs. Sandwich Bags

## C

### CALIFORNIA CONTAINER CORP.

Emeryville, Calif.  
Los Angeles, Calif.

(Western Container Company)

Seattle, Wash.  
Portland, Oregon  
Products

Corrugated Fibre Containers for All  
Commodities—  
Fruit and Vegetable Canners Cases  
Frozen Food Shipping Cases  
Egg Cases  
Dried Fruit Cases  
Baby Chick Boxes  
Corrugated Fruit Packing Supplies  
Apple Boxes  
"Fruit Cradles," "Wrapaks"

### CALIFORNIA-OREGON PAPER MILLS

Division of Columbia River Paper Mills  
Los Angeles, Calif.

Products

Wrappings—  
Tissues—  
Sulphite  
Fruit Wraps—  
Oiled, plain and printed  
Waxing Papers—  
Plain and printed  
Vegetable Parchment  
Plain and printed  
Specialties

### CAPITAL ENVELOPE CO., LTD.

Los Angeles  
Products

Envelopes, commercial and special  
Glassine Bags, plain and printed

### CARPENTER ENVELOPE COMPANY Division of Carpenter Paper Co.

Los Angeles  
Manufacturers  
Products

Complete line of Envelopes

### CENTRAL FIBRE PRODUCTS CO. (Formerly Colorado Paper Products Co.)

Denver, Colo.  
Products

Manila Vat-lined Box Boards  
Book Vat-lined  
News Vat-lined  
Test Liner  
Test Chip  
Pasted Chip  
Pulp Wall Boards  
Container Stocks  
Sheathing  
White Blanks  
Colored Folding Box Boards  
Set Up Box Boards  
Plain Chip, Rolls and Sheets

### CERTAIN-TEED PRODUCTS CORP. Richmond, Calif.

Products

Roofings—

Mineral Surfaced Shingles  
Mineral Surfaced Roll Roofings  
Smooth Surfaced Roll Roofings

Felts and Building Papers—

Asphalt felt, 15 and 30 lb.  
Asphalt sheathing  
Tuftite Kraft Sheathing  
Blue pasterboard, 30 lb.  
Deadening felt, ¼ and 1 lb.  
Sheathing paper, 20 and 30 lb.  
Unsaturated felt and building pa-  
pers

Brands

Shingles—

12" Thick Butt  
Hexagonal  
Universal  
Individuals  
Certain-teed, Beaver Vulcanite

Roll Roofing—

Split Sheet, Super Certain-teed  
Certain-teed, Guard  
Certain-teed Structural Insulation  
Board  
Certain-teed Hard Board  
Densewood Products  
Genuine Beaver Board  
Bestwall Plaster Board

### CHASE BAG CO.

Portland, Ore.  
Products

Burlap Bags  
Cotton Bags  
"Saxolin" Open Mesh Paper Bags  
Crinkled Paper Liners for Bags and  
Barrels.



**CONTINUING RESEARCH SINCE 1907** has steadily improved the quality and efficient application of PMC chemicals. These products, plus Hercules trained technical representatives, offer paper makers outstanding service.

#### PAPER-MAKING CHEMICALS

Paste Rosin Size  
Dry Rosin Size  
Paracol\* Wax Emulsions  
Alum  
Foam Killers  
Silicate of Soda  
Sulphonated Tallow  
Oil Soaps  
Felt Cleaner & Detergent  
Clay  
Acids  
Gloss Oil  
Caustic Soda  
Soda Ash  
Purified Cotton Linters  
Ultramarine Blues

#### COATING CHEMICALS

Satin White  
Casein  
Casein Solvents  
Soda Ash  
PMC Flake Caustic  
Tri-Sodium Phosphate  
Borax  
Sulphonated Castor Oil  
Hercules Steam-distilled Pine Oils  
PMC Eveners  
Formaldehyde

\*REG.  
TRADE MARK

The nearest PMC office is ready to serve you.



### PAPER MAKERS CHEMICAL DEPARTMENT

**HERCULES POWDER COMPANY**

INCORPORATED

KALAMAZOO ★ MICHIGAN



Stoneham, Mass.  
Holyoke, Mass.  
Albany, N. Y.

Wilmington, Del.  
Atlanta, Ga.  
Savannah, Ga.  
Jacksonville, Fla.

New York, N. Y.  
Detroit, Mich.  
Marrero, La.  
Kalamazoo, Mich.

Milwaukee, Wis.  
Chicago, Ill.  
Portland, Ore.  
San Francisco, Calif.

Freeman, Ont.  
(Hercules Powder Co.  
(Canada) Ltd.)

**CLARKSBURG PAPER CO.**  
Oakland, Calif.

## Products

Boxes—Shipping, Corugated, Fibre

**COAST ENVELOPE AND LEATHER PRODUCTS CO.**  
Los Angeles

## Products

Envelopes  
Book Covers  
Leather Goods
**COLUMBIA RIVER PAPER MILLS**  
Vancouver, Wash.

## Products

Wrappings—  
Bleached and Unbleached butcher  
and Sulphite wrapping paper  
Fruit Wraps—  
Citrus and deciduous, oiled, plain or  
printed  
Bleached and Semi-Bleached Wrap-  
ping tissues  
White and Colored Napkin Tissue  
Bleached Specialties  
Sulphite Bonds  
Envelope  
Writings
**CONTINENTAL BAG SPECIALTIES**  
CORP. and ONEIDA PAPER  
PRODUCTS, INC.  
Los Angeles

## Products

Cellophane Bags—  
Flat  
Square  
Satchel Bottom (FUL-LOK)  
Cellophane Envelopes—  
Coffee Bags, Flavo Fresh  
Glassine Bags—  
Flat  
Square  
Glassine Envelopes, Open End  
Ice Cream Bags  
Window Bags—  
Self-Opening with full-length (strip)  
window  
Self-Opening with die-cut window  
Flat & Square—  
Full-face window  
Partial face (strip) window  
Waxed Bags—  
One Side  
Two Sides  
Pre-printed  
Catalog Envelopes, Open End  
Kraft Bags, Miscellaneous except Gro-  
cery  
Flat  
Square  
Flavo-Fresh Sandwich Bags  
Kleenway All-Purpose Bags  
(For consumer re-sale)
**COOS BAY PULP CORPORATION**  
Empire, Oregon

Anacortes, Wash.

(Anacortes mill closed temporarily Nov.,  
1942)(Wholly owned subsidiaries of the Scott  
Paper Co., Chester, Pa.)

## Products

Unbleached Sulphite Pulp

**CORRUGATED KRAFT**  
CONTAINERS, INC.  
Oakland, Calif.

## Products

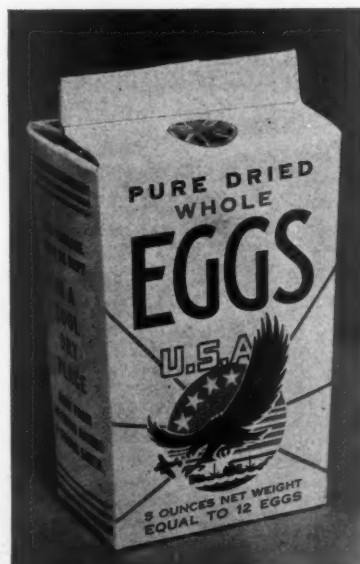
Corrugated Shipping Cases  
Solid Fibre Shipping Cases
**CROWN MATCH COMPANY**  
Los Angeles

## Products

Paper Book Matches

**CROWN WILLAMETTE PAPER**  
COMPANY
Division Crown Zellerbach Corporation  
Camas, Wash.; West Linn, Ore.;  
Lebanon, Ore.

## Products

Towels—  
Alfibre—Junior and Midget (folded)  
Aristocrat, 2-ply (folded)  
K r a f s p u n—Junior and Midget  
(folded)  
Radiant—(Roll)  
Milady Household Roll Towels  
Bakers Bags—  
Crown Bread Bags  
Bleached Sulphite Wrapping—  
Crown Snowfibre, M. F.  
Butcher Papers—  
Crown Alpine Meat Wrap—S. F.  
White Full Bleached  
Crown Meat Wrap—S. F. Natural  
Crest Meat Wrap—S. F. or W. F.  
Natural  
Crest Butcher Fibre—W. F. Mottled,  
Natural  
Crest Moistite Butcher—Dry Finish  
(Natural), Pink, White  
Crest Veribest Butcher—S. F. Pink  
Citrus Tissues — Plain and Printed  
Crown Citrus  
Colored and Striped M. G. Sulphite  
Wrapping—  
Crown Damask Alfibre—M. G. wide  
stripe  
Commercial Wrapping Tissue—  
Crestex No. 1½ Tissue—Unbleach-  
ed White  
Converting Kraft—  
Crown Grocery Bag Paper  
Crown Envelope Kraft  
Crown Gumming Kraft  
Crown Asphaltting Kraft  
Crown Waxing Kraft  
Envelope Manila—  
Crown Envelope Manila  
Excelsior Paper—  
Crown Tissue Excelsior  
Fruit Papers —Plain and Printed—  
Crown Alfibre Fruit Wrap  
Crown Fruit Fruit Wrap  
Crown Copperized Alfibre Fruit  
Wrap  
Crown Tomato Wraps—M. F.—  
White  
Crown Cantaloupe Wrap—Treated  
Manila  
Grocery Bags—  
Crown Kraft—S. O.  
Otter—S. O.  
Gummed Tape—  
Crown Flash Tite Sealing Tape  
Kraft Wrapping—  
Crown Kraft—Natural Brown, M.  
F. Plain  
Crown Damask Kraft — Natural  
Brown, M. G. wide stripeManifolding Paper—  
Crown Manifolding TissueMill Wrappings—  
Crown Mill WrapperNapkins—  
Fixture and Special-fold Napkins  
Package NapkinsNewsprint—  
Standard News (rolls)  
Commander News (sheets)  
Crown Printers Roll News  
Crown Printers Sheet News  
Crown Flat-bed Sheet News  
Crown Pink, Green and Peach NewsOdd Bags—  
Crown Carbon Black Bags  
Crown Banana Bags  
Crown Notion Bags  
Crown Millinery Bags  
Crown Garment Bags  
Crown Liquor Bags  
Crown Barrel Bags  
Crown Poultry Bags  
Crown Super Bags  
Crown Nail Bags  
Crown Confectionery Bags  
Crown Laundry Bags  
Crown Shopping BagsSpecialty Bags—Plain and Printed—  
Crown Raisin, Prune, Peach, Fig,  
Potato and Arsenate of Lead BagsRaisin Tray—  
Crown Sunbeam Raisin TraySalesbook Manilas—  
Crown Salesbook ManilaSulphite Box Liners—  
Crown Box Liners—Pink, Blue and  
White

A NEW PAPERBOARD CONTAINER developed in 1942 by JULIUS A. ZINN, JR., for liquid and dry products. Offering greater rigidity and strength, it is used for lend-lease and other overseas shipping. The construction of the ZINN container was described in the December, 1942, issue of PACIFIC PULP AND PAPER INDUSTRY.



## *St. Regis offers localized, specialized Multiwall paper bag packaging service*

St. Regis Paper Company maintains three Pacific Coast multiwall bag factories, strategically located for prompt deliveries.

The wide acceptance and use of St. Regis Packaging Systems is due in large measure to the specialized service rendered by our engineers and field service organization. In daily relations with customers, these men have first-hand knowledge of current conditions. This intimate acquaintance with packaging operations, combined with our vast experience in the manufacture of paper bags and bag filling and closing equipment, enables our representatives to offer authoritative advice.

As leaders in the industry we consider it our obligation to maintain continuing research and development for the betterment of paper bags and packing and closing equipment, and to be prepared to offer the specialized service which has established and maintained the St. Regis reputation to any manufacturer interested in exploring the economy and efficiency of paper bag packaging.



**Offices also at:**

Seattle, Wash.  
Toledo, Ohio

Birmingham, Ala.  
Baltimore, Md.

Denver, Colo.  
Dallas, Tex.

Los Angeles, Calif.  
Franklin, Va.

New Orleans, La.  
Nazareth, Pa.

Sulphite Wrapping—  
 Crown Manila  
 Crown Grocerwrap  
 Tire Wraps—  
 Crown Tire Wraps  
 Waxing Sulphite  
 Crown Opaque Bread Wrap  
 Crown Bleached Waxing Sulphite  
 Waxing Tissue—  
 Crown Snowtex Waxing Tissue  
 Crestex Waxing Tissue  
 Waxed Papers—  
 Crown Waxfibre  
 Alpine Waxfold  
 Crest Waxfibre  
 Florist Tissue  
 Waterproof Paper (Laminated)—  
 Crown Laminated Kraft

**CROWN WILLAMETTE PAPER CO.**  
 Division Crown Zellerbach Corporation  
 Los Angeles  
 Products

Self-opening Grocery Bags (Otter Kraft)  
 Fruit Wraps, plain and printed  
 Napkins  
 Embossed Semi-crepe Napkins  
 Fixture and Special-fold Napkins  
 Package Napkins—

**CROWN ZELLERBACH CORP.**  
**NATIONAL PAPER PRODUCTS**  
**CO. DIVISION**

Port Townsend, Wash.

Products

.016 Kraft Liner Board  
 .030 Kraft Liner Board  
 .016 to .038 Suit Box Board  
 Cement Bag Paper  
 Grocery Bag Paper  
 Sack Paper  
 Kraft Wrapping Paper

**D**

**DIXIE-CUP CO.**  
 Los Angeles, Calif.  
 Products

Paper Water Cups  
 Paper Soda Cups  
 Paper Ice Cream and Food Containers

**E**

**EL REY PRODUCTS CO.**  
 Los Angeles  
 Products

Asphalt Roofing  
 Asphalt Slate Surfaced Shingles  
 Composition Shingles  
 Saturated Lining Felt  
 Saturating Felt  
 Deadening Felt  
 Red and Gray Duplex Sheathing  
 Car Linings  
 Industrial Floorings  
 Dry Felts  
 "Metalic" Surfaced Roofing

**THE ENVELOPE CORPORATION**  
 San Francisco  
 Products

Envelopes of every description—Printed and Plain

**ENVELOPE MANUFACTURING CO.**

Los Angeles

Products

All types of Envelopes

**EVERETT PULP & PAPER CO.**

Everett and West Tacoma, Wash.

Products

Book Papers—

Nautilus E. F. Book, White, India, Yellow, Blue, Pink, Green and Orange

Nautilus Super Book, White

Nautilus Eggshell, White

Ensign E. F. Book, White

Ensign Super and Eggshell White

Everett Soap Wrapper (Alkali Proof), White

"Hard-Wear" Catalog White

Everett Non-Fading Poster, White, Orange

Everett White Wove Envelope

Everett Printing Manila—(Printcraft)

Everett Blanking Paper—White

Label and Lithographic Papers

Litho Poster, White

Everett M. F. Label, White—

Everett Super Label, White—B Finish

Offset Papers—

Seaplane Book (No. 2 Offset) White

—Tub Sized

Writing Papers—

Everett Railroad Writing (O. P. S.) White

Everett Penmanship Writing (M Grade) White

Everett No. 4 Opacity Bond, White  
 Canary, Buff, Blue, Pink, Green, Goldenrod

Everett Stadium Bond, White, Canary, Buff, Blue, Pink, Green, Goldenrod

Mimeograph Papers—

Everett Signwell Mimeo (152X Hard Sized) White Wove, Blue, Pink, Canary, Green, Buff, Goldenrod.

Pensign Wave Mimeo—

White, Blue, Pink, Canary, Green, Buff, Goldenrod

Everett Laid Mimeo (Slack Sized) White, Blue, Pink, Canary, Green, Buff, Goldenrod

Everett Copiwell Papers (Duplicating Papers) 2 grades—"B" White, Canary, Buff, Blue, Salmon, Green, Goldenrod; "L" Grade, White only

Tablets and Stationery—

Li-Rite Notebooks, Composition Books

Tablets, Pads, Composition Books, Notebooks and Fillers

Opaque School Papers

Drawing Papers

White, Detail, Gray and Buff

West Trade Commercial Stationery

West Trade Filing Cards (White)

West Trade Columnar Pads

Tru Line of Note Books, Composition Books, Filler Books

Gray Bogus Paper

Federal Reserve Perforated Pads

Adding Machine and Teletype Paper

**F**

**FERNSTROM PAPER MILLS, INC.**  
 Pomona, California

Products

Citrus Fruit Wraps—Treated and untreated, printed one and two colors of ink, M. F.

Deciduous Wraps (Fruit and Vegetable)—Oiled and unoiled, printed and unprinted, copperized, M. G. and M. F.

Napkins—M. G. white menu

Department Store Tissue—Flat and quirefolded, M. F.

Laundry Tissue—Flat and quirefolded, M. G.

One-time Carbonizing Tissue

Bottle Wraps—Printed and unprinted  
 Waxing and other tissue specialties

Brands—"Pomona Brand" on foregoing

"Protecto" Toilet Seat Covers

**FIBREBOARD PRODUCTS Inc.**  
 Port Angeles, Sumner, Wash.  
 Los Angeles, Stockton, Antioch, Calif.  
 San Francisco

Products

Boxboards—

Boxmakers Grades

Tagboard

Binders' Board

Kraft and Jute Liners

Corrugating, Rag, Straw and Sulphite Board

Paper Cans: Tubes—

Paper Cans

Coffee Cans

Special Cottage Cheese Cans

Drug Cans

Double "White-Tite" Cans

Paper Caps and tin ends of all descriptions

Mailing Tubes

Telescope Mailing Tubes

Screw Top Mailing Tubes

Kraft Tuck-end Mailing Tubes

Egg Packing—

6x6 Fillers

Egg Cartons, 3x4 and 2x6

"Cushion-Pak" Egg Cartons, 3x4

and 2x6

Egg Case Flats

Folding Cartons

Raisin and Dried Fruit Cartons

Fruit and Vegetable Packing

Fruit and Berry Baskets

Tea and Coffee Cartons

Cereal Cartons

Display Cartons

Frozen Food Cartons

Doughnut Cartons

Butter and Ice Cream Cartons

Miscellaneous Folding Cartons

"Pure-Pak" Milk Containers

"Tredonia" Bakery Packages

Bottle Carriers

Corrugated Products—

Corrugated Rolls

Photo Mailers

"Super-Test" Corrugated Shipping Cases

"Levelbest" Canners Cases

Milk Cases

Coffee Cases

Beer Cases

Fruit and Vegetable Cases

Wine Cases

Glass Cases

Cannery Cases

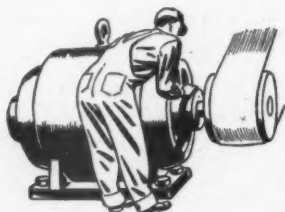
Interior Packing Cases

Miscellaneous Cases



## How to fight the invisible saboteur in your plant

**Inside every plant** is an invisible saboteur—*friction*. Hard-working machines are apt to break down, cause costly delays in production, unless precious equipment is guarded every moment with proper lubrication. This calls for a planned lubrication system, for using the correct lubricants. This is a job for your Associated Lubrication Engineer. Day after day Associated Lubrication Engineers are examining equipment in plants like yours. Their efficient lubrication suggestions have saved vital equipment from wearing out; have saved plant owners thousands of dollars. There's an Associated Lubrication Engineer in your locality. Why not discuss your lubrication problems with him? There's no obligation of course. It's just another Associated service.



**Electric motors** require special care. Check belt tension frequently as a tight belt puts excessive strain on bearings. Belts that are too loose

cause driven machines to operate at slower than normal speed. And, above all, lubricate regularly but moderately, in accord with the instructions supplied with the motor. Avoid overloading, keep commutator and brushes clean, make sure motor is free from moisture and dirt, inside and out. Checking your electrical equipment is one of the many things Associated Lubrication Engineers can do for you.



**Diesel equipment** will run better, longer, if you use top-quality fuel and lubricants. Associated Motor Diesel Fuel is an extra clean *distilled* Diesel fuel that prevents the formation of gum and carbon on the nozzle tips that lead to the cylinders. Cadel N.C. Diesel Engine Lubricant is a non-corrosive

oil that cleans while it works. Cadel N.C. adheres to metal surfaces, prevents dry starts, keeps parts rust-free. These two Associated Diesel products are popular wherever Diesel equipment is used in the West.

### FREE TRUCK LUBRICATION CHARTS

Ask the Associated representative in your locality for **FREE** truck and tractor lubrication charts, for both gasoline and Diesel equipment. There's no obligation—it's another Associated service.

### BUY AN EXTRA BOND

#### A FEW OF THE HUNDREDS OF ASSOCIATED PRODUCTS



Cycl Steam Cylinder Oils  
Cycl Mill & Shaffling Oils  
Cadel N.C. Diesel Engine Lubricant  
Associated Motor Diesel Fuel  
Gasolines - Motor Oils  
Fuel Oils

## Let's get ASSOCIATED

TIDE WATER ASSOCIATED OIL COMPANY

*Oil is Ammunition—Use it wisely!*



Cereal Cases  
Butter Cases  
Display Stands  
Frozen Food Cases

## Solid Fibre Products—

"Super-Test" Solid Fibre Shipping Cases  
"Levelbest" Cannery Cases  
Fruit and Vegetable Cases  
Cannery Cases  
Dried Fruit Cases  
Salmon Cases  
Butter Cases  
Interior Packing Cases  
Miscellaneous Cases  
Cereal Cases  
Soap Cases  
Liquor Cases  
Hexagon Asphalt Drums

## Pails—

Food Pails  
Ice Cream Pails

## Commodity Folding Boxes—

Cake Boxes  
Laundry Boxes  
Cake Circles  
Candy Boxes  
Clothing Boxes  
Hat Boxes  
Millinery Boxes  
Collar Bands

## Fruit Packing—

Berry Baskets  
Liners—Corrugated and Chip  
Pads—Corrugated and Unfaced Indent  
Collars  
Fig Trays  
Fig Partitions  
Fruit Baskets  
Peach Shims  
Orange Shims  
Basket Shims  
Shims—Plain and Combination  
Basket Circles  
Labels  
Diagonal Cell Fillers

## FIELD-ERNST ENVELOPE CO.

San Francisco

## Products

Printed and Plain Business Envelopes for mailing and filing

## FIR-TEX INSULATING BOARD CO.

St. Helens, Ore.

## Products

Insulating and Acoustical Board  
Fir-Tex Building Board  
Fir-Tex Ivykote Board  
Fir-Tex Finish Plank  
Fir-Tex Insulating Lath  
Fir-Tex Insulating Tile  
Fir-Tex Refrigeration Insulation Blocks  
Fir-Tex Roofing  
Fir-Tex Hardboard  
Fir-Tex Sheathing

## LLOYD A. FRY ROOFING CO.

Compton, Calif.

Portland, Ore.

## Products

Asphalt Roll Roofing  
Asphalt Slate Surface Shingles  
Slate Roll Roofing  
Rag Felt  
Deadening Felt

## G

## GATES PAPER CO., LTD.

Los Angeles

## Products

Round Fibre Cans  
All types of round Mailing Tubes  
Paper Cores

## GAYLORD CONTAINER CORP.

Oakland

## Products

Corrugated and Solid Fibre Shipping Containers

## GRAYS HARBOR PULP &amp; PAPER CO.

Hoquiam, Wash.

## Products

Sulphite Bonds  
Mimeograph  
Envelope  
Writing  
Sulphite Specialties

## GRIFFIN ENVELOPE COMPANY

Manufacturers

Seattle

## Products

Machine Fold Envelopes  
Hand Fold Envelopes  
Envelopes—Plain  
Envelopes—Printed

## H

## HAWLEY PULP &amp; PAPER CO.

Oregon City

## Products

Newsprint—  
Standard White  
Rolls and Sheets  
Poster Paper  
Drawing Manila—Standard Colors  
Sulphite Wrapping—  
Cheviot Wrapping in Blue and Green  
Cheviot Bristol in Eight Colors  
Cheviot Mimeo Paper in Colors  
Treated Cheviot Innerwrap  
Cheviot Litewrap  
Cheviot Meat Wraps  
Grocers and Butchers Wrapping  
Treated Moistpruf Wrapping  
Sulphite Screenings  
Corrugating Boxboard  
Deciduous and Soft Fruit Wrappers  
Tissue Paper, Unbleached  
Unbleached Toilet Tissues in Rolls  
Towels, Interfolded and Rolls for Time-Controlled Towel-Craft Cabinets  
Imitation Greaseproof

## I

## INLAND EMPIRE PAPER CO.

Millwood, Wash.

## Products

Newsprint—  
Rolls and Sheets  
White, cream, colors  
High Grade News—  
Special halftone and magazine print  
No. 1 Colored Poster

## Mimeograph News—

Laid and wove  
White and six colors  
Sub, 16, 20

## Coarse Papers—

Car Linings  
Screenings  
Ham Wrap  
Sheathing  
Corrugating

## Bond—

No. 4 Bond in white and colors  
Mimeo Bonds

## Envelope—

Fibretint Envelope  
White Wove Sulphite Envelope

## Wrapping—

Fibretint Wrapping  
Empire Butchers Bleached  
Butchers Sulphite  
Grocers Sulphite  
Fibretint Butchers  
Butchers Manila  
Sulphite and Groundwood Specialties—

## J

## JAITE PAPER BAG COMPANY

Plants: St. Helens, Ore.  
Wilmington, Cal.

Offices: San Francisco

## Products

Multiwall Sewn Paper Bags

## JOHNSON ENVELOPE CO.

San Diego, Calif.

## Products

Catalog Envelopes  
Expanding Envelopes  
File Folders  
Filing Envelopes  
Mailing Envelopes  
Merchandise Envelopes  
Photo Mailers  
Tag Envelopes

## JOHNS-MANVILLE SALES CORPORATION

San Francisco

Materials Manufactured at Pacific Coast Factories

## J-M Asbestos Shingles—

Dutch Lap, Hexagonal  
No. 35 American Method  
American Colonial (507)

## J-M Asbestos Siding Shingles

Texture Shingles

## J-M Rock Wool Home Insulation

Type A—Loose Wool

## J-M Roofing Materials

Built-Up Asbestos & Rag Felt Roofings

Asphalt Shingles

Smooth Surfaced Roll Roofings

Slate Surfaced Roll Roofings

Building Papers—Roofing Felts

Roof Coatings and Putties

## J-M Industrial Building Materials

J-M Waterproofing Materials

J-M Celite for Concrete

## J-M Power Products

Refractory Products

Miscellaneous Power Products

Transite Flue Pipe

Transite Pressure Pipe

*There IS a difference!*



**H**ERE are two diamond rings which, to the untrained eye, look exactly alike. Both stones are the same size, both are in identical settings. Yet one is valued at \$875, the other at \$1875. Only a diamond expert could immediately point out the differences: the flawlessness, proper color and perfect cut of the more expensive gem.

Insurance Brokerage firms also *seem* to "do business" identically. All are presumed to be concerned with the proper buying of insurance contracts best suited to their clients' needs — familiar with policy contracts and "market" conditions to a degree which makes possible the arrangement of such insurance.

***HERE is the difference!***

—which an insurance brokerage firm like *Cosgrove & Company, Inc.* brings to those who seek proper and adequate protection. Staffed by experts who have a thorough knowledge of the insurance needs of individuals and business firms, who are technicians in the buying of the best available contracts, and who keep abreast of the constant developments in every field of insurance, we offer our clients an unexcelled service. Of particular value today is the loss prevention work of our inspection and engineering department.

If you are not certain that your present insurance program is as adequate and up-to-date as today's conditions demand, *Cosgrove & Company, Inc.* will analyze your insurance needs and advise you accordingly.

**COSGROVE & COMPANY Inc.**  
*Insurance Brokers • Average Adjusters*

SAN FRANCISCO • LOS ANGELES • SEATTLE • PORTLAND • NEW YORK • LONDON

Transite Sewer Pipe  
Asbestos Paper  
85% Magnesia Insulation  
Low Pressure Insulations  
High Pressure Insulations  
Insulating Cements  
Insulating Powders  
Insulating Brick  
Filter Aids & Mineral Fillers

## L

### LAMINATED PAPER BOARDS

San Francisco, Calif.

#### Products

Laminated Board and Specialty Paper Products

Specialize in the manufacture of Glassine Laminated Boards, which are greaseproof and moisture resistant

W. P. LASS, INC.

Santa Cruz, Calif.

#### Products

Moulded Wood Fibre Containers

### LILY-TULIP CUP CORPORATION

Crystal Division

Los Angeles

#### Products

Lily, Tulip and Gem Drinking Cups  
Lily and Gem Soda Cups  
Lily and Gem Carry-Out Cups  
Crystal Drinking Cups  
Crystal Souffle Cups  
Crystal Water Bottle Caps  
Lily and Gem Ice Cream Containers  
Tulip Nestrites  
Tulip Nestrite Tubs  
Tulip Souffles  
Lily, Tulip, Gem and Resale Packages  
Lily Straws

### LONGVIEW FIBRE COMPANY

Longview, Washington

#### Products

#### Sulphate Board

Cylinder Test Liner  
Cylinder Non Test Liner  
Fourdrinier Test Liner  
Cylinder Corrugating Board  
Fourdrinier Corrugating Board  
Duplex Kraftlined Asphalted Board  
Waxed Board

#### Combined Board

Test Corrugated Sheets, A Flute and B Flute  
Non Test Corrugated Sheets, A Flute and B Flute  
Solid Fibre Sheets

#### Kraft Paper

Plain and Watermarked, Printed and Unprinted, Natural, Colored, Semi-Bleached and Full Bleached  
Machine Glazed

#### Wrapping

Bag  
Gumming Kraft  
Tire Wrap  
Bakers' Manila  
Envelope

#### Fourdrinier Machine Finished

Wrapping  
Bag  
Butchers  
Gumming Kraft  
Tire Wrap  
Envelope Kraft

Multiwall Bag Papers  
Laundry Manila  
Drug Bond  
Bakers' Manila  
Brushkraft  
Raisin Tray

### Duplex Asphalted Waterproof Paper Products

Sheathing Paper  
Car Liner  
Multiwall Bag Liner  
Asphalted Specialties

### Paper Towels

#### Kraft, Semi Bleached and Full Bleached

Interfolded Paper Towels—

Singlefold  
Doublefold  
Fourfold  
Harcraft Paper Towels  
Roll Paper Towels  
Household Paper Towels

#### Creped Paper Products

Plain Crepe Kraft  
Asphalted Crepe Kraft  
Waxed Crepe Kraft

#### Waxed Paper Products

Delicatessen Paper  
Semi-Bleached  
Full Bleached  
Lettuce Crate Liners  
Powder Box Liners  
Waxed Specialties

#### Kraft Bags

Plain and Watermarked, Machine Glazed and Machine Finished, Printed and Unprinted, Single and Duplex Walls, Plain, Waxed and Asphalted, Sewed Creped, Flat, Self-Opening, Satchel Bottom, Square and Tube Styles

Grocery  
Notion and Millinery  
Garment

Pants

Barrel

Poultry

Laundry

Cigarette Carton

Doughnut

Liquor

Shopping

Carryall

Beverage

Bread

Confectionery

Pop Corn

Sugar

Raisin

Prune

Shot

Opaque Drug

Paper Milk Bottle

Dry Ice

Wet Wash Laundry

License Plate

Chocolate

Can End

Shoe

Ice Cream Bar

Ice Cream Carton

Briquette

Potato

Apple Chop

Bean

Insecticide

Garbage Pail Liner

Insulation

Chemical

Egg Crate Liner

Poultry Box Liner

Date

Beef

Celery

Bathing Suit

Butter Cube

### Shipping Containers

V-1, V-2 and V-3 Shipping Containers  
Test Corrugated Shipping Containers, A Flute and B Flute  
Non Test Corrugated Shipping Containers, A Flute and B Flute  
Interior Packing

### LOS ANGELES PAPER BAG CO.

Los Angeles

#### Products

#### Paper Bags—

Grocery  
Millinery & Notion  
Garment  
Shopping  
Sacks  
Liquor  
Sanitary Napkin  
Carton

Bag printing of all kinds.

## M

### MEKAN-I-KLOTH COMPANY

Bellingham, Wash.

#### Products

#### Mekan-i-Kloth—

Soft Wiping Tissue  
Substitute for Rags  
Grease Absorbent  
Sanitary-Disposable  
All Ways a clean cloth

## N

### NATIONAL CARD, MAT & BOARD COMPANY

Los Angeles

#### Products

Artists Illustration Board

Backing Board

Embossed Boards

Linen Finish Boards

Calendar and Photo Mounts

Card and Mat Board Products

Coated Board

Cover Papers

Display Card-Board and Easels

Greeting Card Stock

Illustration Boards and Bristol

Paper Board Specialties

Pasted Board

Picture Backing Board

Poster Board and Paper

Box Cover Papers

Checkbook Cover

Cover Paper Decorated

Cover Paper Embossed

Foil Papers

Melton Mounts

Memo Book Cover

Mount Boards

Camera Club Mount Boards — Plain and Cut-out

### NORTHWEST ENVELOPE MFG. CO.

Seattle

#### Products

Envelopes—Plain and Printed





## EARNED BY EVERY EMPLOYEE

BY their untiring work the men and women of Rice Barton Corporation have earned the right to fly the Army-Navy "E" over this plant—and to wear the coveted "E" pin.

The "E" pennant is truly a symbol of the vital partnership between our armed forces, on land and sea, and our soldiers of production here at home.

To help our country and allies win a decisive victory we realize that whatever has been done today must be but an inspiration for greater deeds tomorrow.

★ ★ ★

For more than a century Rice Barton Corporation have designed and built machines for the making of paper. At present our plant facilities are devoted to work for the Maritime Commission and restricted work for the Navy.

We are looking forward to the day, after this war has been victoriously ended, when we shall again renew contacts with our friends in the paper-making industry.

*Rice Barton*  
President

*Rice Barton Corporation*

*Established 1837*

*Worcester, Massachusetts*

## O

**OREGON PULP & PAPER CO.**  
Salem, Ore.

## Products

White and Colored Bond  
Writings  
Envelope, White and Colored  
Ledger  
Mimeograph, White and Colored  
Glassine, greaseproof, Innerwrap—  
Bleached and unbleached  
Specialties  
Manifold Parchment

**OWENS-ILLINOIS PACIFIC COAST  
COMPANY**  
San Francisco

## Products

Corrugated Shipping Cases and Cor-  
rugated Products

## P

**PACIFIC COAST ENVELOPE CO.  
DIVISION**  
San Francisco

## Products

Printed and plain envelopes for mail-  
ing and filing

**PACIFIC COAST PAPER MILLS**  
Bellingham, Wash.

## Products

Toilet Tissue—  
Bleached and unbleached roll  
Interfolded and Flat Pack  
Mekan-i-kloth  
Napkins—  
White, embossed,  
Flat, quarter-fold  
Dispenserfold  
Sanitary Napkins  
Towels—  
Unbleached Sulphite  
Brands  
M. D. Tissue  
M. D. Sanitary Napkins

**PACIFIC COAST PULP & PAPER CO.**  
Richvale, Calif.

## Products

Rice Straw Toweling

**PACIFIC MILLS, LIMITED**  
Ocean Falls, B. C.

## Products

Converting Plant, Vancouver, B. C.  
Newsprint  
Kraft Pulp  
Sulphite Pulp  
Kraft paper, M. F. and M. G. plain  
and striped  
Butchers Manila  
Sulphite tissues  
Toilet tissue  
Napkins  
Fruit Wraps  
Towels  
Bread Wraps  
Printed Wrapping  
Plain and printed waxed papers  
Solid Fibre Shipping Cases  
Gummed Kraft and Sulphite Tape—  
Plain and Printed

**PACIFIC NORTHWEST PAPER  
MILLS**

Division of Columbia River Paper Mills  
Portland

## Products

Safety Paper  
Adwrap Decorated Wrappings  
Christmas Specialties

**PACIFIC ROOFING CO.**  
Portland, Oregon

## Products

Roll Roofing Felts, Building Papers,  
Roof Coating and Asphalt  
Complete line of Roofings—Shingles,

**PACIFIC PAPERBOARD COMPANY**  
Longview, Wash.

## Products

Combination Board  
Plain Chip Board  
Solid News  
News and Manila Lined  
Bleached Manilas  
Mist Gray and Colored Boards  
Container Board  
White Patent Coated Board  
Solid Pulp Board  
Egg Case Filler  
Folding Boxes  
Wax Lined Food Trays  
Sheet Lined Boards

**PACIFIC WAXED PAPER CO**  
Seattle, Wash.

## Products

Printed Waxed Paper—  
Bread Wrappers  
Candy Bar Wrappers  
Frozen Fruit & Vegetable Wrappers  
Transparent Cake Wrappers  
Adsealit Bands  
Plain Waxed Paper  
Waxed Glassine  
Transparent Cake Wrappers  
Vegetable Crate Liners  
Delicatessen Paper  
Bags—Plain and Printed  
Glassine—Waxed and Unwaxed  
Cellophane  
Window Bags  
Dry Waxed Bags  
Laminated Bags  
Specialty Bags of All Kinds  
Hot Cap Paper  
Pacific Hot Houses  
Tredonia Moistureproof Show Case  
Boxes with Cellophane windows for  
doughnuts, sweet doughs, laye r  
cakes, and bakery products of all  
kinds

**PALMER-BINGHAM ENVELOPE CO.**  
606 E. 12th St.  
Los Angeles

## Products

Greeting Card Envelopes  
Wedding Announcement Envelopes  
Wallet Flap Envelopes  
Commercial Envelopes

**PAPER SUPPLY CO.**  
Los Angeles

## Products

Resale Rolls of—  
Shelf Paper  
Tissue Paper  
Holly Paper  
Decorative Wrappings

## Distributors:

Ribbons, Plain Colors or Decorated  
for every use  
Glassips Cellophane Soda Straws,  
all colors for hot or cold bev-  
erages

**PARAFFINE COMPANIES, INC.**  
Emeryville, Calif.

## Products

Mineral Surfaced Shingle Roll  
Roll Roofings  
Mineral-Surfaced Roofings  
a. P & B  
b. Malthoid  
c. Durable  
Smooth-Surfaced  
a. P & B  
b. Malthoid  
c. Durable  
d. Santo  
e. Paramount  
f. Raintite  
g. Coverite  
h. Mastercraft  
Building Papers and Sheathings  
1. Asphalt Sheathing  
2. P & B Light Bldg. Paper  
3. Doublekraft  
4. 30-lb. Felt  
5. 15-lb. Felt  
6. Pabcotite  
7. Red Liner  
8. Plasterers' Felt  
9. Deadening Felt  
10. Rosin-Sized Sheathing  
Roof Coatings and Plastics  
1. Raintite Fibre Roof Coating  
2. XXX Coating  
3. Hydroseal, Black and White  
4. Lap Cement  
5. Roofing Asphalt  
6. Concrete Primer  
7. Asphalt Emulsion  
Car Linings  
Mulch Papers  
Pipe Wrappings  
Fibre Wallboards  
Rock Wool  
Brands  
Malthoid Durable

**PATERSON PACIFIC PARCHMENT  
COMPANY**  
San Francisco

## Products

Patapar Vegetable Parchment—Plain,  
Printed, Waxed and Creped  
Durapak Insoluble Crate Liners and  
Wet Strength Paper—Plain, Printed  
and Rippled  
Parchkin Art Parchment  
Patapake and Patawite Printing Paper  
Patawite Manifold Paper  
Waxed Ice Cream Can Liners  
Waxed Paper

**PERFECTION TWINE CO.**  
Camas, Wash.

## Products

Specialty Bags—  
Mattress Bags  
Casket Covers  
Multi-wall Bags  
Specialty Shipping Bags  
Furniture Bags, etc.  
Paper Twines and Cords—  
Seaming Twines  
Fleece Twines  
Handle Cord Twine, etc.  
Molded Fibres  
Tacking Strips

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of Superintendents

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**THE AMERICAN PULP AND PAPER MILL  
SUPERINTENDENTS ASSOCIATION, INC.**

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June 15, 16, 17, 1943

The Commodore Hotel • NEW YORK

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*Write Hotel for Reservations*



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P. O. Box 2218, Terminal Annex  
Los Angeles, Calif.

**Products  
Roofing Division**

Asphalt Roofing—Dry Felt, all weights,  
12 to 108 lbs.  
Asphalt Mineral Surfaced Shingles  
Asphalt  
Asphalt Emulsion  
Asbestos Shingles and Siding  
Rosin-sized Sheathing  
Corrugated Asbestos  
Blue Plasterboard  
Insulating Papers  
Insulation Board  
Asphalt Paints, Plastic Cement, Flash-  
ing Compound  
Hardboard  
Mulch Papers  
Pipe Wrap Coverings

Car Lining Papers  
Duplex Kraft Sheathing  
Asphalt Saturated Felt  
Camouflage Paints  
Industrial Coatings

**Box Board & Container Division  
Pioneer Super White Patent Coated  
Boxboard**

Pioneer Super Manila  
Pioneer Super Mist Grey and all colors  
Pioneer Super Suit Box Boards  
Pioneer Super Poster Card Board  
Pioneer Black Ebonkote Board  
Pioneer Show Print Board  
Pioneer Solid News Board  
Pioneer Kraft Board Liners  
Pioneer Jute Board Liners  
Pioneer Pasted Chip  
Pioneer Colored Manila Lined Boards  
Pioneer Bleached Manila Lined Boards  
Pioneer Book Lined Chipboard  
Pioneer News Lined Chipboard  
Pioneer Shirt Boards  
Pioneer Division Boards  
Pioneer Fruit Box Liners

Pioneer Fruit Box Shims  
Pioneer Kraft Metal Lath Backing  
Pioneer Plaster Board Liner (kraft)  
Pioneer Corrugated Containers  
Pioneer Corrugated Partitions  
Pioneer Corrugated Beer Cases  
Pioneer Corrugated Canners Cases  
Pioneer Corrugated Shipping Cases  
Pioneer Corrugated Export Cases  
Pioneer Corrugated Display Cases  
Pioneer Corrugated Display Stands  
Pioneer Single Faced Corrugated Rolls  
Pioneer Solid Fibre Containers of all  
kinds  
Pioneer Solid Fibre Display Cases and  
Stands  
Pioneer Solid Fibre Partitions

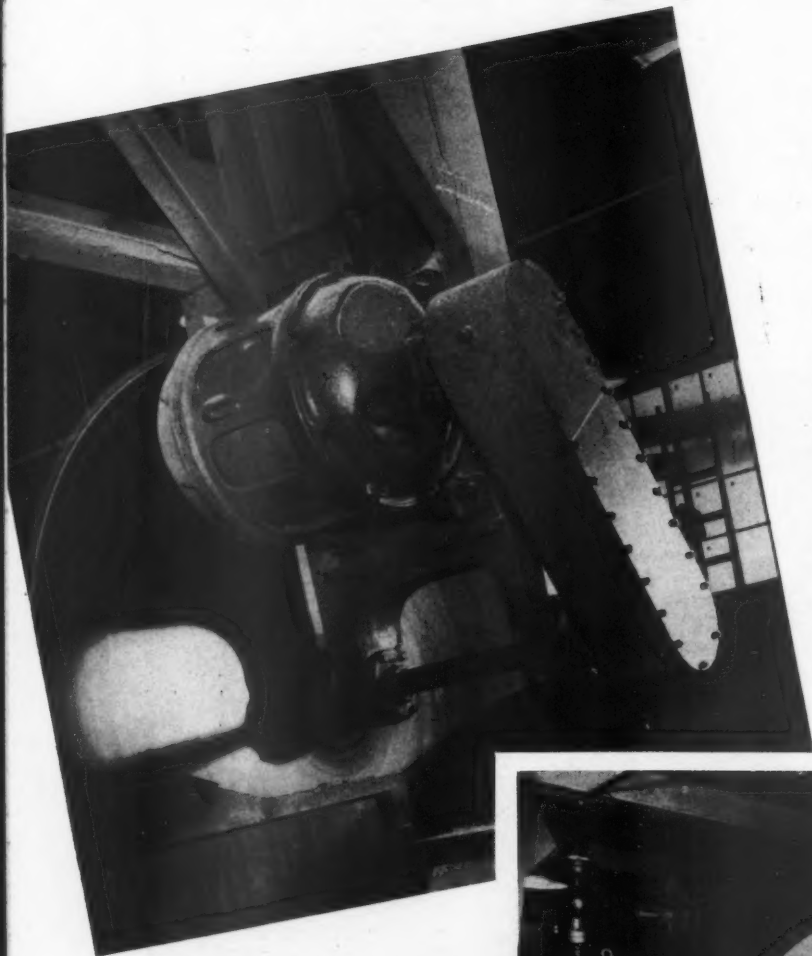
**Folding Box Division**

Cloak and Suit Cartons  
Dog Food Cartons  
Sausage Cartons  
Breakfast Cartons  
Cracker Cartons  
Cookie Cartons



**PAPERBOARD CONTAINERS SAVE WEIGHT AND SPACE ON SHIPS AND PLANES.** This means our shipyards and plane factories are required to make just so many fewer planes and ships in order to win VICTORY. This photograph was taken at Treasure Island, San Francisco, where Chief Carpenter's Mate A. T. JONES, U. S. Navy (left), and KURT HAUXTHAUSEN, Pan-American Airway's cargo in paperboard containers. Pan-American Airways announced the repacking saves 500 pounds per trip on the big clipper planes.

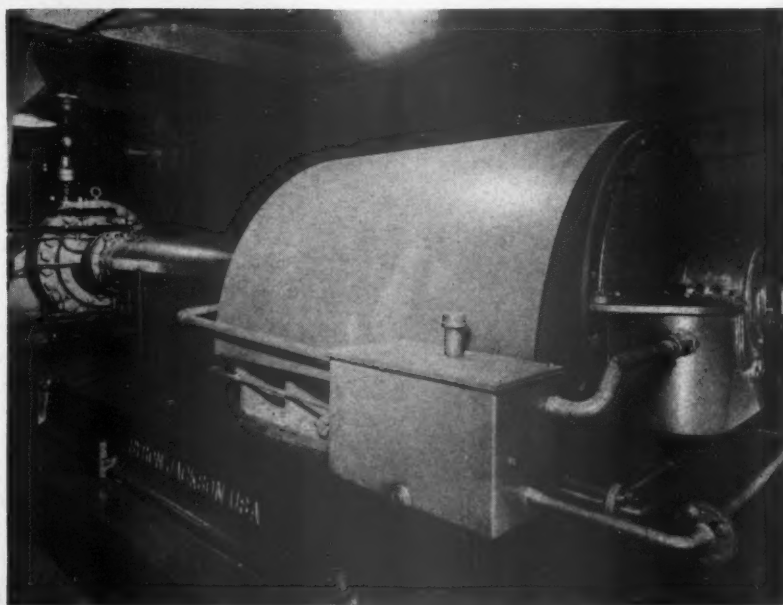
# More power to



Shown above is the big swing cutoff saw drive; at the right is the 1000 hp three-phase, 3600 rpm, 2200 volt drive motor for the seven stage high pressure main pump in the hydraulic barking operation.

The opening of the Weyerhaeuser hydraulic barking and chipping mill at Everett, Washington, is an outstanding step in the production of increased amounts of vitally needed paper. The commendably important fact about this latest contribution to the war program is that the job is being done at a *saving* in wood cost and a *saving* in man power. The Pacific Northwest may well share with Weyerhaeuser the justifiable pride of accomplishment in the completion of this progressive new mill.

Westinghouse has been honored with the responsibility of supplying much of the important electrical equipment so necessary in the economical operation of this plant. All power used in the plant is supplied through a Westinghouse



# Westinghouse

# Weyerhaeuser

distribution system which concentrates control in the time-tested Westinghouse Unit Control Centers. Such a system provides maximum economy and safety, and greatly reduces the supervisory man power required.

Westinghouse drives, too, are doing important jobs in the new Weyerhaeuser plant. The large main pump for the hydraulic barking operation is powered by a 1,000 hp Westinghouse motor; the big swing cutoff saw is also equipped with a Westinghouse constant speed induction motor. In these and many other applications throughout the plant, Westinghouse motors are supplying dependable, trouble-free power, providing economical operation with minimum man power.



2200 volt power for the new Weyerhaeuser hydraulic barking and chipping mill at Everett, Washington is supplied from the control cubicles shown above. 550 volt power is supplied through Unit Control Centers, as shown at the left, where individual drives are controlled from a single safe, economical, centrally located point, thus minimizing man power required for supervision. Westinghouse controls and switchgear are used exclusively.

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Department Store  
Hat and Millinery  
Trousseau  
Funeral Urn Boxes

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Los Angeles

## Products

Gift-Wrap Holiday Wrapping Papers  
Printers of Cellophane and other Food Wrappers  
Printers, Converters and Distributors of Plain and Fancy Wrapping Papers for the Holiday trade

**POMONA PAPER PRODUCTS, INC.**  
Pomona, Calif.

## Products

Waxed Paper Rolls in Cutter Edged Boxes  
Paper Napkins for home use

**POWELL RIVER CO., LTD.**  
Powell River, B. C.

## Products

Newsprint  
Unbleached Sulphite Pulp  
Laminated Papers

**PUGET SOUND PULP & TIMBER COMPANY**  
Bellingham, Wash.

## Products

Unbleached Sulphite Pulp

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San Francisco, New York and Seattle  
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Hoquiam, Washington  
Port Angeles, Washington  
Shelton, Washington

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Specialty Pulps for the manufacture of: munitions, plastics, cellulose, impregnated products, vulcanized fibre, welding rods, etc.  
Bleached Sulphite Pulp for the paper industry

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Milbrae, Calif.

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Corrugated Rolls  
Corrugated Specialties  
Solidfibre Cases  
Royal Wrap  
Pasted Board  
Paper Excelsior  
Paper Excelsior Packing Pads  
Fruit Packs and Wraps  
Embossed Packing  
Single, Double Wall and Laminated Paper Bags—  
For Shipping Mattress, Furniture and Caskets  
Miscellaneous Handmade Bags  
Confetti

**S****ST. HELENS PULP & PAPER CO.**  
St. Helens, Ore.

## Products

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Gumming  
Waxing  
Bag  
Meat Wraps—Fully bleached, semi-bleached  
Tire Wraps—Printed or Plain  
Fruit and Canteloupe Wraps—Printed or Plain  
Box Liners  
Toweling  
Tissue  
Towels—Interfolded  
Delicatessen—Waxed, Rolls, Cartons, Interfold  
Printed Papers of all Kinds—  
Paper Bags—  
Grocers  
Garment  
Notion  
Beer

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Converting Plants at Seattle, Washington; Emeryville and Los Angeles, California

## Products

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Chemical Bags  
Moisture-proof Bags, etc.  
Valve Bag Filling Machines, Open-Mouth Bag Closing Machines

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Kraft Pulp Division  
Tacoma, Wash.

## Products

Sulphate Pulp—Bleached and Unbleached

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Salinas, California

## Products

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Waxed Specialties  
Asphalt Laminated Kraft  
Car Liners  
Building Paper  
Laminated Specialties

**SANI-GARD COVER CO.**  
Los Angeles

## Products

Paper Toilet Seat Covers

**SCHMIDT LITHOGRAPH CO.**  
San Francisco

## Products

Lithographed Labels  
Lithographed Cartons  
Lithographed Posters  
Lithographed Display Advertising  
Lithographed Direct Mail Advertising  
Coated Papers  
Corrugated Products  
Seed Bags

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Los Angeles

## Products

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Coverite Closure Caps  
Cylindrical Food Containers  
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Pasadena, Calif.  
(Main Plant—Mt. Vernon, O.)

## Products

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Printed Cellophane Rolls  
Printed Cellophane Sheets  
Laminated Materials for war industries and civilian applications

**SHERMAN PAPER PRODUCTS CORP.**  
Los Angeles

## Products

Baking Cups  
Fluted Cake Pan Liners  
Die Cut Liners  
Labels  
Printed Gummed Cake Bands  
Cake Rounds  
Corrugated Glassine Products  
Embossed and Printed Glassine Doilies

**SIDNEY ROOFING & PAPER CO., LTD.**  
Victoria, B. C.

## Products

Box Board  
Test Board  
Felts  
Building Paper  
Roofing  
Bottle Wrap  
Asphalt Shingles  
Groundwood Pulp

**SORG PULP CO., LIMITED**  
Port Mellon, B. C.

## Products

Unbleached Sulphate Pulp

**SOUNDVIEW PULP CO.**  
Everett, Wash.

## Products

Bleached Sulphite Pulp

**SOUTHLAND PAPER CONVERTING CO.**  
Los Angeles

## Products

Jumbo Furniture and Mattress Shipping Bags  
Sanitary Paper Shower Slippers  
All types Hand-Made Bags  
Fruit Box Guards  
Open Mouth Multi-Wall Paper Bags  
Creped Kraft Meat Bags  
Barrel, Case and Bag Liners

**SPAULDING PULP & PAPER CO.**  
Newberg, Ore.

## Products

Unbleached Sulphite Pulp

## T

**TOWLSAVER, INC.**  
Los Angeles  
Products

Roll Paper Towels  
Roll Paper Towel Dispensers

## U

**U. S. GYPSUM CO.**  
Southgate, Calif.  
Products

U. S. G. Asphalt Shingles  
Thatch Point Roll Roofing  
Star Slate Roofing  
Star Corrugated Roofing  
U. S. G. Specification Roofing  
Cascade Roofing  
Gold Star Roofing  
U. S. G. Asphalt Saturated Felts  
U. S. G. Building Felt  
U. S. G. Saturated Sheathing  
Kraft Sheathing Paper  
Deadening Felts  
Duo-Color Sheathing Paper  
Blue Plasterboard  
Base Sheets  
White and Black Top Cap Sheets  
U. S. G. Roof Coatings and Cement  
U. S. G. Asphalt Emulsions  
Chip Paper  
Roofing Felt

**UNITED STATES ENVELOPE CO.**

Los Angeles Division  
Los Angeles  
Products

Commercial Envelopes  
Columbian Clasp Envelopes  
Paper Cups  
Papeteries

**U. S. TISSUE CONVERTING CO.**

Los Angeles  
Products

Tissue Garment Bags  
Clothing Boxes  
Millinery Boxes  
Glove Paks  
Tie Paks  
Carboard Garment Hangers

**UNIVERSAL PAPER GOODS CO.**

Los Angeles  
Products

Special Envelopes  
Filing Containers

## W

**WASHINGTON PULP & PAPER CORPORATION**

Division of Crown Zellerbach Corp.  
Port Angeles, Wash.  
Products

Newsprint

**WEST COAST PAPER PRODUCTS CO.**

Portland, Oregon  
Products

Bottle Caps

**WEST COAST PAPERBOARD MILLS, INC.**

Los Angeles  
Products

Chipboard

**WESTCO PAPER PRODUCTS CO.**

Oakland, Calif.

Products

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Skirt Hangers (paperboard)  
Shirt Collar Protectors  
Garment Bags  
Tissue  
Laundry Lists, etc.  
Advertising Hand Bills  
Printing  
Diecutting


**WESTERN CONTAINER COMPANY**

Seattle, Wash.  
Portland, Oregon  
(California Container Corp.)  
Emeryville, Calif.  
Los Angeles, Calif.  
Products

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Commodities—  
Fruit and Vegetable Canners Cases  
Frozen Food Shipping Cases  
Egg Cases  
Dried Fruit Cases  
Baby Chick Boxes  
Corrugated Fruit Packing Supplies  
Apple Boxes  
"Fruit Cradles," "Wrapaks"

FIELD NOTES

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Save your temper...and your transmission belt. Never force a belt onto a pulley; excessive force may cause mechanical rupture of the belt structure. If the installation permits, shorten the distance between pulley centers, and the belt will slip on easily. If the installation has no adjustable take up, spring the transmission belt onto the pulleys thru use of a sling made of soft cotton rope that will have no destructive cutting action on belt.

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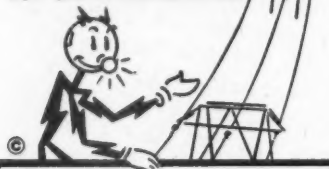
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Salem, Ore.

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Confectionery Bags  
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Correspondence Stationery  
School and Commercial Stationery  
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Sanitary Napkins

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CELLULOSE PURIFICATION  
AND RELATED PROCESSES

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